Division of Agricultural Sciences
UNIVERSITY OF CALIFORNIA

TOMATOES AND TOMATO PRODUCTS— ECONOMIC TRENDS AND F.O.B. PRICE RELATIONSHIPS

Sidney Hoos

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GIANNINI FOUNDATION OF AGRICULTURAL ECONOMICS

Mimeographed Report No. 185 March 1956

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Sidney Hoos[1/]

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1/ Professor of Agricultural Economics and Agricultural Economist on the Giannini Foundation and in the Experiment Station.

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Introduction

This report summarizes some economic and market information prepared at the request of growers of tomatoes for processing and canner-distributors of canned tomatoes and tomato products. These materials reflect background and situation information discussed and analyzed with various groups in the industry, including growers and canners.

The complex structure of the tomato industry in California is related to the multiple use of tomatoes used in processing as well as the interaction between the fresh and processed markets. Furthermore, California growers and canners are concerned with potential influences from other major areas producing tomatoes for processing. Of growing interest is the importance of specialty tomato products, for example, canned tomato sauce and paste as a significant outlet for California processing tomatoes.

In terms of value as well as volume, canned tomatoes and tomato products as a group comprise a leading vegetable grown and processed in California. Tomatoes for processing have attracted the attention of an increased number of growers. Most of the growers produce other crops as well, although tomatoes are of special interest for many of them. The canners include one group which packs a broad line of canned fruits and vegetables and a smaller group which orients specialized attention to tomato products along with a more limited line of canned vegetables.

Tomatoes are produced, processed, and marketed in California free of special marketing arrangements as state or federal marketing orders. The activity in recent years to have introduced a state marketing order, for producers alone or for producers and processors, failed to generate adequate support. This

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report is concerned with general economic trends and market relationships rather than particular marketing mechanisms as marketing orders.

The first section of the report summarizes and considers "Economic Trends." Aside from the general information sketched there, the material serves as a background for the second section of the report, "F.O.B. Price Relationships," which outlines some analysis of various significant influences bearing on the annual average f.o.b. prices of California canned tomatoes.[1/]

Economic Trends

Production.--Tomatoes are produced for two broad categories of utilization--for the fresh markets and for processing into various types of tomato products. Since the economic trends in production for the fresh and processed uses differ in California from the country at large, the respective trends are considered separately. The general situation, as it changed during the past decade and a half, is outlined in the following summary table.

Tomato Production

Annual averages for indicated periods	For fresh market		For processing	
	California	United States	California	United States
	thousands of tons			
1939-1943	143.42	738.3	646.4	2,581.1
1944-1948	189.90	851.4	1,114.6	2,867.7
1949-1953	213.56	900.3	1,480.1	3,229.4
1954-1955	257.20	965.5	1,384.0	2,729.3

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During the past 15 years or so, there developed a sharp upward trend in production for the fresh market in both California and the country at large. Production of tomatoes for the fresh market increased much more sharply in California than in other producing states considered as a group. In both areas, however, the production in recent years has been above that of the prewar years. The over-all market for fresh tomatoes has expanded.

When tomatoes produced for processing are considered, differing trends for California and the country also become evident. In both areas production for processing has generally trended up during the past decade and a half but again more sharply in California. The above summary table shows that from 1939-1943 to 1949-1953 national production for processing increased by about 25 per cent, compared with about 130 per cent in California. Production decreased in 1954-55 by some 500,000 tons for the national figure and by about 100,000 tons in California. In terms of proportions, California tomato production for manufacture into products has increased; in 1939-1943, the state accounted for 25 per cent of the national tonnage, compared with 45 per cent in 1949-1953 and about 50 per cent in 1954-55.

Acreage.--The distribution of tomato acreage, for fresh market and products use, is summarized in the following table:

Tomato Acreage

Annual averages for indicated periods	For fresh market		For processing	
	California	United States	California	United States
	acres			
1939-1943	28,340	223,980	91,300	477,000
1944-1948	33,520	261,300	123,600	515,200
1949-1953	28,820	233,960	99,000	354,100
1954-1955	31,700	250,000	80,000	266,700

[illegible]

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Acreage.--The distribution of tomato acreage, for fresh market and products, is summarized in the following table:

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

In both California and the country at large, and also for both the fresh and processed outlets, the acreages advanced to peaks in the period of war and immediate postwar years, then receded. This occurred relatively more sharply for the processed than the fresh outlets, reflecting the wartime acreage expansion which was induced by abnormal conditions as defense demands for tomato products. The past several years, acreage for tomatoes destined for processing has been much below the levels reached in earlier years. The processing acreage decline has been relatively sharper in California than the country in general.

Yield.--The continued upward trend in yield per acre has been one of the more outstanding developments in the commercial tomato-growing industry. An outline of what has occurred in yields is shown in the following summary table.

Tomato Yields

Annual averages for indicated periods	For fresh market		For processing	
	California	United States	California	United States
	tons per acre			
1939-1943	5.06	3.28	7.14	5.48
1944-1948	5.68	3.26	9.10	6.06
1949-1953	7.44	3.84	14.80	9.14
1954-1955	8.10	3.90	17.30	10.20

When the yields per acre of production destined for the fresh market are reviewed, one notes that in both California and the country generally the yield has trended up. But the upward trend has been much more sharp in California, with an increase of more than 3 tons per acre between 1939-1943 and 1954-55 compared to about 2/3 of a ton increase for the country during the same period.

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Annual averages for indicated periods	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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When the yields per acre of production destined for the fresh market are reviewed, one notes that in both California and the country generally the yield has trended up. But the upward trend has been much more sharp in California, with an increase of more than 3 tons per acre between 1949-1953 and 1954-55 compared to about 2/3 of a ton increase for the country during the same period.

Similar sharp differences are evident in the yields for processing tomatoes. Again, the yield trend has continued up for both California and the United States, and again, the up trend has been sharper in California. The 1954-55 yield in the state was about 142 per cent above the average yield during 1939-1943; during the same period, the national yield increased about 86 per cent. As will be noted below, yield increases account in an important way for the behavior of production trends.

Relations between Production, Acreage, and Yield.--The interaction between acreage and yield resulted in production changes. Below are shown indexes (average of 1948-1950 = 100) for the period since 1939 for the acreage, yield, and production of tomatoes for processing.

Tomatoes for Processing

Annual averages for indicated periods	California			United States		
	Harvested acreage	Yield per acre	Production	Harvested acreage	Yield per acre	Production
	indexes, 1948-1950 = 100					
1939-1943	115	58	66	134	72	97
1944-1948	155	74	115	145	80	115
1949-1953	124	120	152	100	121	121
1954-1955	101	141	142	75	135	102

First, we consider the indexes of United States commercial production, acreage, and yield of tomatoes for processing. The national acreage for processing rose to a wartime peak in 1942, remained high through 1946, and then declined through 1949. The next two years experienced some recovery; but after 1951, acreage declined to levels lower than in the preceding 15 years.

[illegible] trend has continued up for both California and the United States, and again the up-trend has been sharper in California. The 1934-39 yield in this state was about 142 per cent above the average yield during 1919-1923; during the same period, the national yield increased about 36 per cent. As will be noted below, yield increases account in an important way for the behavior of production trends.

[illegible] Acreage and Yield.--The interaction between acreage and yield resulted in production changes. Below are shown indexes (average of 1924-1930 = 100) for the period since 1929 for the acreage, yield, and production of tomatoes for processing.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
			[illegible]	[illegible]	[illegible]
			[illegible]	[illegible]	[illegible]
			[illegible]	[illegible]	[illegible]
1924-1928	135	74	115	60	115
1929-1933	124	120	152	121	121
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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National yield per acre of processing tomatoes followed a slight upward trend until the middle 1940's, then embarked on a strong upward trend which continued on through and after the war years.

The interaction of national acreage and yield was reflected in a variable production over the years. Production of tomatoes for processing in the country at large trended up from the late 1940's through 1948, then declined. A sharp rise to an all-time peak in 1951 was followed by declines in the next several years. Without the rising trend in yields during the past half-dozen years, national production would have declined more than it actually did.

Now we consider the acreage, yield, and production indexes of California processing tomatoes. Wide changes in acreage occurred with an upward trend from 1938 through 1947. Postwar adjustment was reflected in a sharp cutback in acreage for processing tomatoes. But suddenly in 1951 acreage reached an all-time peak after which there was a sharp cutback to near the 1948-1950 average.

California per acre yield of processing tomatoes followed a clearly defined and persistent upward trend, with the year-to-year growth continuing during and after the war years. The long-term trend in California production has been influenced by the increasing yield trend, while the short-term trends in the state's production have been influenced by the variable short-term trends in acreage. Thus, the production pattern, in effect, reflects the acreage pattern superimposed on the yield pattern over the years.

Farm Prices.--The trend differentials between the over-all average farm prices (gross returns per ton at the first delivery point) for tomatoes are suggested by the following summary table.

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Farm Prices for Tomatoes

Annual averages for indicated periods	For fresh market		For processing	
	California	United States	California	United States
	dollars per ton			
1939-1943	91.16	68.92	16.98	17.00
1944-1948	152.34	118.14	27.06	28.41
1949-1953	142.52	132.66	25.06	27.40
1954-1955	138.20	129.50	20.20	24.20

The wartime and then postwar levels of farm prices for tomatoes, fresh market and processing, exceeded those of the prewar years, reflecting expanded markets but also inflationary tendencies acting on prices of most products. Of interest is that for both the fresh market and processed tomatoes and for California and the country in general, after the 1949-1953 period, prices tended to decline. Such occurred more for processing tomatoes than those for the fresh market and more in California than in the country at large. For the fresh market, California tomatoes return a higher farm price per ton than the national average for fresh market tomatoes. But in the processing outlets, California farm prices per ton average less than the national price for processing tomatoes.

Processed Products.--A significant aspect of the California processed tomato industry concerns the number of different products manufactured from tomatoes. The complete list includes about a dozen different products, the major ones being tomato paste, sauce, catsup, juices, canned whole tomatoes, and puree. These items are generally packed in metal and glass containers for distribution as shelf pack. Recently, however, frozen tomato juice concentrate has been introduced, indicating a further widening of the tomato products line; and tomato juice powder (crystals) is at an advanced stage of development.

The distribution of the California tomato pack among the various items processed is shown in the table below. There may be noted relative volumes of the different items and how the distribution has varied over time.

Products Distribution of California Tomatoes Processed

Annual average for indicated periods	Canned whole	Juice	Puree	Paste	Sauce	Catsup	Others	Total
	per cent of tonnage processed							
1939-1943	19	10	8	30	11	12	10	100
1944-1948	9	13	12	33	11	11	11	100
1949-1953	10	13	5	36	13	13	10	100
1954-1955	11	13	4	32	16	15	9	100

During the war years, compared with the prewar period, the percentages for juice, puree, and paste increased, while the percentage for canned whole tomatoes decreased sharply. Since the wartime developments, the canned whole tomato outlet has remained near 10 per cent; juice has remained at 13 per cent; paste has remained near 33 per cent; and sauce and catsup have gained some percentage points. Puree, however, has declined substantially and in recent years has been under its prewar percentage level. The minor products, grouped under "others," have remained stable at near 10 per cent. Tomato paste remains the largest single outlet for California processing tomatoes. In recent years, paste and sauce together have accounted for nearly half of the total tonnage of California tomatoes processed.

Canners' Pack and Shipments.--In the preceding sections attention was directed to tomato production and utilization in the various outlets. Here, we turn to a survey of trends in the canner packs and shipments of the major processed products. The California canner packs, carry-in, and shipments for the

The illustrations of the following tables are based on the seasonal [illegible] processed in each of the three periods. Charts [illegible] of the different items and how the distribution has varied over time.

Product Distribution of California Tomatoes Processed

Season	Juice	Puree	Paste	Sauce	Catsup	Others	Total
	Percent of tonnage processed						
1939-1943	10	10	8	30	11	12	10	100
1944-1948	9	13	12	33	11	11	11	100
1949-1953	10	13	5	36	13	13	10	100
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During the war years, compared with the prewar period, the percentages for juice, puree, and paste increased, while the percentage for canned whole tomatoes decreased sharply. Since the wartime development, the canned whole tomato output has remained near 10 per cent; juice has remained at 13 per cent, paste has remained near 33 per cent; and sauce and catsup have gained some percentage points. Puree, however, has declined substantially and in recent years has been under its prewar percentage level. The minor products, grouped under "others," have remained above at near 10 per cent. Tomato puree remains the largest single outlet for California processing tomatoes. In recent years, paste and sauce together have accounted for nearly half of the total tonnage of California tomatoes processed.

Stocks and Shipments.--In the preceding sections attention was directed to tomato production and utilization in the various outlets. Here, we turn to a survey of trends in the canner packs and shipments of the major processed products. The California canner packs, carry-in, and shipments for the

six major products manufactured from tomatoes since 1936-37 are shown in Table 6 at the end of the report.

The California pack and canner shipments of canned whole tomatoes varied although widely about 4,000,000 cases (24 No. 2 basis) from 1936-37 to 1939-40. The 1940 pack approached 7,500,000 cases, and the following year's pack was even heavier. Thus, the heavy pack of canned tomatoes in 1941, supplemented by a substantial carry-in, provided a large supply of canned tomatoes the year this country entered World War II. As the war progressed, the California canner packs and shipments of canned whole tomatoes were cut back; and by 1945, the pack and shipments amounted to somewhat over 3,000,000 cases or the smallest for over a decade.

A series of larger packs, with varying carry-ins, prevailed from 1946-47 through 1950-51. But in 1951-52, another period of heavier supplies occurred. The years 1953-54 and 1954-55 began with very comfortable carry-ins supplementing the higher level of packs. In terms of cases, the volume of California canned whole tomatoes during the past half-dozen years has averaged higher than during the preceding 15 years. Thus, although canned whole tomatoes take a small proportion of the crop than in the prewar years, the pack in terms of number of cases exceeds that of the years just before the war years.

The California canners' pack of tomato juice grew substantially during the first half of the 1940's, reflecting wartime expanded demand as well as supplies called for by the armed forces. In 1946-47 an unprecedented large pack became available, but canner shipments that year were under those of the preceding year. Thus began a period of several years having heavy carry-ins. The packs after 1946 and through 1950 varied near 7,000,000 cases (24 No. 2 basis), and in 1951-52 there was the first of several years with even heavier packs. The pack and carry-in for 1952-53 provided the heaviest marketing-year supply recorded. Although the packs of the next two years were cut back, the substantial

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carry-ins in combination with the packs made available supplies in excess of those usual during the 1940's and earlier years.

The pack and supply of catsup manufactured from California tomatoes grew very slightly until 1946-47. Then there began a period of several years ending in 1950-51 when the catsup packs were generally higher than previously. In 1951-52 there began another series of years with catsup packs at still higher levels. The record level of supply in 1952-53 was due to the large carry-over reflecting the record pack of the previous year. Each of the past several years began with a carry-in considerably larger than the general experience of the 1930's and 1940's. As noted earlier, catsup has accounted for an increasing proportion of the California tomato crop processed.

The packs of California canned tomato paste since 1936-37 are shown in Table 6. The paste pack trended up until 1945 when a cutback occurred. The next year the up trend resumed, and in 1947-48 there was another record pack. Thereafter, the paste pack was at lower levels, although the carry-in stocks in hands of canners made marketing year supplies above those of the prewar years. The all-time record pack in 1951-52, supplemented by only a small carry-in that year, resulted in an all-time record marketing year supply. Since 1951-52, the packs have trended down. However, in terms of proportion of the processed crop absorbed by that outlet, tomato paste remains the major processed utilization outlet for California processing tomatoes.

The pack of California canned tomato sauce followed a slight upward trend through the middle of the 1940's. But beginning in 1946-47, there was a period of increased packs augmented by comfortable carry-ins. As with other tomato products, 1951-52 and 1952-53 were years of heavy supply and so were 1953-54 and 1954-55. But the canner shipments in 1954-55 were at record levels, resulting in a small carry-in for the marketing year 1955-56. In that year, tomato sauce was the second largest outlet for California processed tomatoes.

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The packs of California canned tomato paste since 1926-27 are shown in table 6. The paste pack trended up until 1945 when a cutback occurred. The next year the up trend resumed and in 1947-48 there was another record pack. Thereafter, the paste pack was at lower levels, although the carry-in stocks in terms of canning made marketing year supplies above those of the previous years. The all-time record pack in 1951-52, supplemented by only a small carry-in that year, resulted in an all-time record marketing year supply. Since 1951-52, the paste pack trended down. However, in terms of proportion of the processed crop [illegible]

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Canned tomato puree manufactured from California tomatoes has followed a variable pack and shipments trend as shown in Table 6. During the war years, the pack and shipments of tomato puree expanded much. After the war-induced markets disappeared, the pack was cut back although not to its prewar level. The puree pack trend does not reflect a market expanding along with national population and money incomes.

Consumption Per Capita.--The trends reviewed above in the packs and shipments of tomato products reflected the disposition of California processed tomatoes. As indicated in the appendix tables of this report, tomatoes for processing are also grown in other states. Furthermore, it is of interest to consider the trends in national shipments in relation to national population. Such comparison may be made by use of estimated per-capita consumption data.

In Table 9 are shown computed estimates of the national disappearance for consumption, per capita, of tomatoes and tomato products. The trends shown in Table 9 reflect the experience of the country at large.

When fresh market tomatoes are compared with total processed tomatoes (both on a net farm weight basis), year-to-year variations are noted. Both the fresh and processed consumption rates trended up from the middle 1930's hitting a peak by 1945 at the end of the war years. Immediately thereafter, there was a decline in both the fresh and processed per-capita consumption rates. The fresh market consumption rate continued to recede and then about leveled out during 1950-1954. But after 1948, per-capita consumption of tomato products, in the aggregate, resumed the upward trend and continued to advance.

In Table 9 are shown the national per-capita consumption rates for major tomato products. The different patterns over time are clearly noticeable. The wartime distortion stands out sharply. For the period as a whole, during the past two decades tomato and other vegetable juices (which are heavily blended with tomato juice) have followed an upward trend. In comparison, the item,

[illegible] pack-[illegible] as shown in Table 6. During the war years, the pack and catsup of tomato juice expanded much. After the war-induced needs diminished, the pack returned back although not to its prewar level. The prewar pack trend does not reflect a marked expanding along with national population and money income.

Other Per Capita.--The trends reviewed above in the pack and ship-ments of tomato products reflected the disposition of California processed tomatoes. As indicated in the opening pages of this report, tomatoes for processing are also grown in other states. Furthermore, it is of interest to consider the trends in national alignments in relation to national population. Such comparison may be made by use of estimated per-capita consumption data.

In Table 9 are shown computed estimates of the national disappearance for canning, per capita, of tomatoes and tomato products. The trends shown in Table 9 reflect the experience of the country at large.

When fresh market tomatoes are compared with total processed tomatoes (both data net farm market basis), year-to-year variations are noted. Both the fresh and processed consumption rates trended up from the middle 1930's hitting a peak by 1940 at the end of the war years. Immediately thereafter, there was a decline in both the fresh and processed per-capita consumption rates. The fresh market consumption rate continued to recede and then about leveled out during 1950-1954. But after 1948 per-capita consumption of tomato products, in the aggregate, reversed the upward trend and continued to advance.

In Table 9 are shown the national per-capita consumption rates for major tomato products. The different patterns over time are clearly noticeable. The various transition shards cut sharply. For the period as a whole, during the past two decades tomato and other vegetable juices (which are heavily blended with tomato juice) have followed an upward trend. In comparison, the item.

canned whole tomatoes, in the postwar years has had a lower per-capita consumption than in the prewar years. Canned whole tomatoes have not regained their earlier relative position, although in recent years their consumption has kept in line with population.

Tomato paste and sauce, which enjoyed an increased consumption rate during the war, have maintained the wartime gain and continued to follow a noticeable upward trend. Catsup and chili sauce, although in the 1930's exceeding paste and sauce, in recent years have had about the same consumption rates. Over the period as a whole, catsup and chili sauce have followed a slightly rising trend. Except for the rise during the war and then decline in the several immediate postwar years, the per-capita consumption rate of tomato puree and pulp has been approximately constant. Their consumption growth has not deviated significantly from the national population growth.

In over-all terms, the record indicates that consumers have substantially increased their consumption of tomato products in recent years. The total market for tomatoes in processed forms has increased substantially more than has the market for fresh tomatoes.

F.O.B. Price Relationships

As noted in the previous sections, processed tomatoes are manufactured into a number of different products. This is particularly so in California where tomato products other than canned tomatoes are important. In other producing states, as the Middle West (Indiana section) or the East (Maryland section), canned whole tomatoes are relatively more important. For the country at large, the item canned whole tomatoes is viewed by the trade as a leading index of the tomato products market. For that reason, as well as the one pertaining to the availability of adequate data, primary attention--in terms of f.o.b. price relationships--is here given to canned whole tomatoes.

[illegible] earlier relative position, although in recent years their consumption has been [illegible].

Tomato paste and sauce, which enjoyed an increased consumption rate during the war, have maintained the wartime gain and continued to follow a noticeable upward trend. Catsup and chili sauce, although in the 1930's exceeding paste and sauce, in recent years have had about the same consumption rates. Over the period as a whole, catsup and chili sauce have followed a slightly rising trend. Except for the rise during the war and then decline in the several immediate postwar years, the per-capita consumption rate of tomato puree and pulp has been quite substantially constant. Their consumption growth has not deviated significantly from the national population growth.

In over-all terms, the record indicates that consumers have substantially [illegible] but for tomatoes in processed forms has increased substantially over that [illegible].

E.O.B. Price Relationships

As noted in the previous sections, processed tomatoes are manufactured into a number of different products. This is particularly so in California where tomato products other than canned tomatoes are important. In other producing areas, [illegible] canned whole tomatoes are relatively more important. For the nation as a whole, the item canned whole tomatoes is viewed by the trade as a leading index of the tomato products market. For that reason, as well as the big [illegible] to the [illegible]

In this section are summarized results of analyses of market-behavior relationships, with particular attention given to the annual average f.o.b. prices of canned tomatoes. On the premise that the annual f.o.b. price of canned tomatoes varies in response to and as a reflection of various market-determining influences, the objective is to measure statistically the relationship of the f.o.b. price changes to variations in major economic influences bearing on the market. To indicate the nature of several of the economic variables considered, they are briefly set forth in the following paragraphs.

Data.--The price data are specified as annual (marketing-year) average f.o.b. prices of California canned tomatoes (standard, No. 2) in terms of cents per dozen. It is recognized that "standards" are not the only grade packed and that the No. 2 can is not the only size packed. For clarity in specification as well as precision in interpretation, the standard, No. 2, was selected for analysis with the view that it is considered as an index or reflector of the price behavior of the mixture of size and grade packs traded on the market. Prices of the 303 size would be more appropriate for recent years in view of its marked growth and current importance. As more price data for the 303 size are compiled, it will be substituted for the No. 2 size.

A price series, as specified above, to be ideal for analysis should be actual prices, that is, realized prices received by the canners f.o.b. Such actual or net realized prices are not available for canned tomatoes on an industry-wide basis. As a proxy, it is necessary to use prices based on published data. Such published prices have various shortcomings, particularly when considered for brief periods as a week or month. But annual marketing-year prices based on published data approximate the net realized prices, and there are reasons to believe that the year-to-year changes in the two series are highly correlated. The f.o.b. prices considered here are annual marketing-year averages based on prices published weekly in the California Fruit News. Although recently a

[illegible] latter[illegible] with particular attention given to the annual average f.o.b. prices of canned tomatoes. On the premise that the annual f.o.b. price of canned tomatoes varies in response to and as a reflection of various market-determining influences, the objective is to measure statistically the relationship of the f.o.b. price changes to variations in major economic influences bearing on the market. To indicate the nature of some of the economic variables considered, they are briefly set forth in the following paragraph:

Note.--The price series specified as annual (market-year) average f.o.b. prices of California canned tomatoes (standard, No. 2) at ports of centralized[illegible] It is recognized that "standards" are not the only grade packed and that the No. 2 can is not the only size packed. For clarity in specification as well as precision in interpretation, the standard No. 2 was selected to correlate with the view that it is considered as an index or reflector of the price behavior of the mixture of size and grade packs traded on the market. Prices of the 2½-size would be more appropriate for recent years in view [illegible] greater importance. As more price data for the 2½ size become compiled, it will be substituted for the No. 2 size.

A price series, as specified above, to be taken for analysis should be actual prices, that is, realized prices received by the canners f.o.b. But, because such or such realized prices are not available for enough canneries in a reasonable time period. As a proxy, it is necessary to use prices based on published data. Such published prices have various shortcomings, particularly when considering for brief periods as a week or month. But annual market-year prices based on published data approximate the net realized prices, and there are reasons to believe that the year-to-year changes in the two series are highly correlated.

marked growth of the 303 size can has taken place and an increase in the importance of the "fancy" grade has occurred over the years, the standard, No. 2, is viewed as a useful indicator of the canned tomato price level.

The annual marketing-year average f.o.b. prices (column 1, Table 12) fluctuate around two different levels, one for the prewar years and the other for the postwar years. The war years are omitted because of abnormal conditions including federal price controls. In the latter half of the 1920's, the f.o.b. price varied around 85 cents a dozen (standard, No. 2's). Beginning with the depression years of the 1930's, a lower price level prevailed, excepting 1933-34 and 1934-35. Even as the war years approached, the average f.o.b. prices failed to regain their previous level.

The postwar prices, in terms of current values, have been close to double the prewar levels. Yet, when the postwar prices are deflated to adjust for inflationary influences and what in the trade is referred to as "the value of the dollar," there result deflated prices much in line with the prewar experience. Thus, the long-term trend in the f.o.b. prices reflect in considerable part national monetary influences, whereas, the year-to-year fluctuations in the prices reflect the changing market supply and demand influences.

The data for California canners' f.o.b. movement of canned tomatoes are shown in column 2 of Table 12. One of the problems in the investigation was the seemingly unavailability of complete data on the movement of canned tomatoes from canners' hands. Because of the lack of movement data in the early years (1926-27 through 1930-31), annual packs were used for that period as compiled by the Canners League of California. For the years 1931-32 through 1937-38, annual shipments from California canners as compiled by the Canners League of California were used; for 1937-38 through 1951-52, annual shipments were used as reported in National Canners Association bulletins. From 1952-53 to date, the Canners League of California movement data were again used to construct the movement series.

[illegible]

is viewed as a useful indicator of the canned salmon market level.

[illegible]

were found two different levels: one for sockeye yields and the other for coho pack years. The war years are omitted [illegible] of abnormal conditions [illegible]

prices varied around 85 cents a-dozen (measured in 2's). Beginning with the depression years of the 1930's, a lower price level prevailed, excepting 1934-35 and 1941-[illegible]. Even as the war years approached the average f.o.b. prices failed to regain their previous level.

The packer prices, in terms of current dollars, have been more stable than the grower levels. Yet, when the packer prices are deflated to adjust for inflationary influences and put in the terms in referred to as the value of the dollar, there result deflated prices much in line with the grower experience. There, too, [illegible] trend in the f.o.b. prices reflect to considerable [illegible] national monetary influences. However, year-to-year fluctuations in the prices reflect the changing market supply and demand influences.

The data for California's canners' f.o.b. receipts of canned salmon are shown in column 2 of Table 12. One of the problems in the investigation was the seemingly unavailability of comparable data on the movement of canned salmon from canners' hands. Because of the [illegible] of movement data in the early years (1920-21 through 1930-31), annual packs were used for that period as compiled by the Canners League of California. For the years 1931-32 through 1947-48, annual shipments from California canneries as compiled by the Canners [illegible] were used as reported in Canners Association bulletins. From 1948-49 to date, the Canners Leagues of California monthly data were added to reflect the movement series.

The California canners f.o.b. movement of canned tomatoes in the prewar period varied within relatively narrow ranges during most years but with wide swings occurring irregularly as in 1930-31 and 1940-41. During the prewar period as a whole, there was a slight upward trend in f.o.b. movement of canned tomatoes. The postwar movement has averaged at a substantially higher level and reflects a sharp upward trend due to the record level of pack and movement during the past several years.

In the analyses, it was necessary to recognize that canned tomatoes fall in two categories: one item in a group of canned vegetables as peas, green beans, and corn; and one item in a group of tomato products as puree, paste, and sauce. Hence, there arose the need of the specification of two indexes of related commodities. In the case of the group of canned vegetables, preliminary investigation suggested that canned corn, green stringless beans, and green peas were commodities that tended to compete in consumption with canned tomatoes. The decision as to what products should be included in the index of prices of competing canned tomato products was not as clear cut. Desiring to reflect the competition between canned tomatoes and tomato products on the consumption side, tomato juice, paste, and sauce were included in the index of competing tomato products.

The level of competing canned vegetable prices has been measured by an index of prices of canned peas, green stringless beans, and yellow, cream-style corn. The price series for each of those products used in the index is based on or adjusted to f.o.b. cannery prices (f.o.b. eastern markets, Baltimore, Maryland, or eastern) reported in the Canning Trade. Although a fairly complete series for each product was available, some of the years had to be estimated by use of cannery prices published in Wholesale Prices issued by the U. S. Bureau of Labor Statistics.

[illegible]

[illegible] average converting irregularly as in 1940-41 and 1940-41. During the preceding as a whole, there was a slight upward trend in f.o.b. movement of canned tomatoes. The postwar movement has averaged at a substantially higher level and reflects a sharp upward trend due to the reduced level of pack and movement during the past several years.

In the analyses, it was necessary to recognize that canned tomatoes fall in two categories: one item in a group of canned vegetables as peas, green beans, and corn, and one item in a group of tomato products as juice, paste, and sauce. Hence, there came the need of the specification of two indexes of related commodities. In the case of the group of canned vegetables, pea- [illegible] green peas were commodities that tended to compete in consumption with canned tomatoes. The decision as to what products should be included in the index of prices of competing canned tomato products was not as clear cut. Desiring to reflect the competition between canned tomatoes and tomato products on the consumption side, tomato juice, paste, and sauce were included in the index of com- [illegible]

The level of competing canned vegetable prices has been measured by an index of prices of canned peas, green stringless beans, and yellow, cream-style corn. The price series for each of these products used in the index is based on or adjusted to f.o.b. cannery prices (f.o.b. eastern markets, Baltimore, [illegible] price series for each product was available, some of the years had to be estimated by use of cannery prices published in Wholesale Prices issued by the U. S. Bureau of Labor Statistics.

Due to the marked growth in recent years of the 303 can size, the prices of corn and peas were adjusted to the 303 size when that price was not available. The No. 2 size can was retained throughout for green stringless beans. The grade of the products considered was "fancy" for corn, peas, and beans.

The prices of the canned vegetables in the index were weighted by the national pack figures for the prewar years and national annual shipments for the postwar years. These pack and movement data are on an adjusted basis of 24 No. 2 cans. These broad qualifications of the data are supplemented by more detail given in the footnotes to Tables 16 and 17.

The level of prices of tomato products considered relevant with respect to canned tomatoes was measured by an index constructed to include tomato juice, paste, and sauce. Here, again, there was lack of fully appropriate price data. In the index constructed, the tomato juice price is f.o.b. California as reported in the California Fruit News, except the juice prices for the first five years are estimated with the aid of trade information. The tomato juice f.o.b. price is for "fancy" No. 2 size can. The prices for paste include estimates, based on trade information, for the period 1926-27 through 1930-31, and the prices for the other years are based on quotations reported in the Western Canner and Packer Yearbook and the Commercial Bulletin. The tomato sauce prices reflect published data in Calpak Annual or unpublished trade information. More complete details are given in Tables 16 and 17. In general, for weights of each of the products, it was necessary to use annual California pack data for the prewar years and annual shipments from California canneries for the postwar years. The main sources for the pack and movement data used as weight in the index include the Canners League of California and the National Canners Association, with some data from the Western Canner and Packer Yearbook and Statistical Number. Here, again, pack and movement figures were not available on a standard unit basis, so data in actual cases were used as weights in the index.

[illegible]

[illegible] table. The No. 2 size can was retained throughout the green asparagus beans. The goods of the products considered was "Heavy" for corn, peas, and beans.

The prices of the canned vegetables in the index were weighted by the national park visitors for the previous years and predicted annual shipments for the coming years. These park and movement data are on an aggregate basis of 24 months. These broad qualifications of the data are supplemented by more detail given in the footnotes to Tables 16 and 17.

The level of prices of canned products considered relevant with respect to canned tomato sauce was measured by an index constructed from tomato juice, peas, and sauce. Here, again, there was lack of full approximate price data. In the index constructed, the tomato juice price is for Quality 2 as reported in the California Canning Plant, except the price series for the first five years are estimated with the aid of trade information. The tomato juice price is the price in for "Heavy" No. 2 size can. The prices for peas include estimates.

[illegible]

prices for the other years are based on quotations reported in the Market Bulletin and Fruit and Vegetable Bulletin. The tomato sauce prices reflect estimated data in Fruit Prices or unpublished trade information. More complete details are shown in Tables 16 and 17. In general, for weights of each of the products, it was necessary to use annual California park data for the [illegible] years and annual shipments from California canneries for the previous years. The main sources for the park and movement data used as weights in the index include the Canners Leagues of California and the National Canners Association, with some data from the Western Canner and Packer Yearbook and the Pacific Packer. Here, again, park and movement figures were not available on a standard unit basis, so data in actual cases were used as weights in the index.

F.O.B. Price Analysis of California Canned Tomatoes.--The objective considered here is a summary statistical explanation of the year-to-year changes in the annual marketing-year average f.o.b. price of California canned tomatoes. The vehicle is the development of a formula reflecting major market-determined economic forces related to the f.o.b. prices of canned tomatoes. Recognizing the large number of such economic influences, from the practical views of investigation as well as trade use, it is necessary to limit attention to only several influences related to the price. Earlier analyses and further experimentation led to the view that the several most important factors related to the annual marketing-year average price include canners' f.o.b. movement, the level of national income, and the relative price levels of other leading canned vegetables. Other factors considered include the national volume of canned tomato shipments and the relative f.o.b. prices of other tomato products.

The price concerned is the California cannery f.o.b. price of canned tomatoes on an annual average (industrywide) marketing-year basis; the movement is that from California canners; the level of national income is measured by an index of national disposable income; and the relative price level of other leading canned vegetables is measured by an index of the cannery f.o.b. prices of canned corn, green peas, and green stringless beans. These statistical series are commented upon above, and further details are noted in the various tables appended to the report.

The pertinent variables were considered in terms of selecting a combination whose interacting behavior would explain, in a statistical sense, the behavior of the canned tomato price. A large number of alternative combinations of seemingly pertinent factors were analyzed. Those selected for summarization here were judged from the view of acceptability in terms of economics, marketing, and statistical criteria.

The vehicle is the development of a formula reflecting major market-determined economic forces related to the f.o.b. price of varied topsoils, including the large number of such economic variables. From the practical viewpoint of investment as well as trade use, it is necessary to limit consideration to only several factors related to the price. Therefore analysis and further experimentation lead to the view that improved mean instantaneous transportation to the nearest hundredth-year average price include demand, movement, the level of national income, and the relative price levels of other [illegible] of [illegible] for evaluating f.o.b. prices of other topsoil [illegible].

Topsoil consumed in the California economy (c.i.f.) [illegible] prices on an annual basis (calendar) [illegible] is that from [illegible] consumed) the level of national income is measured by an index of national economic [illegible] and the relative price level of [illegible] imported topsoil is measured by an index of the ratio f.o.b. prices plus transported from above, and further details are found in the working [illegible] appended to the report.

The dependent variables were approached by means of formulating a multiple linear regression model explaining in a statistical sense, the variation [illegible] from the level of [illegible] ing, and economical criteria.

The statistical results of various formulations are summarized in Table 18. Several of the formulations are about equally acceptable. From the views of simplicity in interpretation and trade use, equation number 1 in Table 18 has advantages. There, the California f.o.b. price of canned tomatoes is related to California canner shipments of canned tomatoes, national disposable income, and the index of leading canned vegetables considered competing in consumption with canned tomatoes. Although the index of prices of the other tomato products (juice, paste, and sauce) and national shipments probably do have an impact on the market price of California canned tomatoes, the inclusion of those factors in the analysis does not improve the statistical results. Those two variables do not contribute in a significant way to the statistical explanation either because they are not in fact relevant or because their influence is in large part already reflected in other variables in the analysis--prices of the tomato products being reflected in considerable part in the prices of competing canned vegetables and the movement from other states being reflected in part by the shipments from California because of their interrelations.

With use of the equations in Table 18, estimated f.o.b. prices of California canned tomatoes may be computed. Such estimated prices, based on equation number 1, Table 18, have been computed and are shown in Table 13. Although the over-all time patterns in the two price series are substantially similar, discrepancies--and in some years considerable ones--exist between the actual and estimated prices. Of particular interest is the substantial discrepancy in 1953-54. Further, it may be noted that, when the 1954-55 estimated price is projected, it also turns out to be at considerable variance from (above) the actual price for that year. In this connection, trade information indicates that canners' margins for canned tomatoes in those two years were unusually small compared with the historical record. Such reduced margins, by themselves,

[illegible] of the formulations are equally acceptable. From the viewpoint of simplicity in interpretation and trade use, equation number 1 in Table 18 has advantages. There, the California f.o.b. price of canned tomatoes is related [illegible] and the index of leading canned vegetables considered competing in consumption with canned tomatoes. Although the index of prices of the other tomato products (juice, paste, and sauce) and natural substitutes probably do have an impact on the market price of California canned tomatoes, the inclusion of those factors in the analysis does not improve the statistical results. These two variables do not correlate in a significant way to the statistical explanation, either because they are [illegible] in fact relevant or because their influence is in large part already included in other variables in the analysis--prices of the common [illegible] being [illegible] in considerable part in the prices of competing canned vegetables and the movement from other states being reflected in part by the advantage from California's because of their interrelations.

Using one of the equations in Table 18, estimated f.o.b. prices of California canned tomatoes may be computed. Such estimated prices, based on equation number 1, Table 18, have been computed and are shown in Table 19. Although the overall time pattern in the two price series are substantially similar, discrepancies--and in some years considerable ones--exist between the actual and estimated prices. Of particular interest is the substantial discrepancy in [illegible]. Further, it may be noted that, when the [illegible]-[illegible] estimated price is compared, it also turns out to be at considerable variance from (above) the actual price for that year. In this connection, trade information indicates that unusual margins for canned tomatoes in those two years were unusually small compared with the historical record. Such factors, anything, by themselves,

do not explain the discrepancies but do indicate that abnormal market conditions did prevail in those two years. For the current marketing year 1955-56, preliminary projection suggests that the formula computed or the estimated price is reasonably well in line with the eventual actual marketing-year price as it is indicated by current market prices. It is clear that the estimating equations are not perfect predictors, but they do provide a supplementary basis for formulating judgments as to price behavior. With the use of business judgment, the equations and their corresponding price relationships may contribute to a better understanding of the market behavior of the f.o.b. price of California canned tomatoes and its market determinants. As more adequate estimating equations are developed for canned tomatoes, and as they approach the effectiveness of comparable equations for other products, the price-projecting equations for canned tomatoes will serve as a more firm bases for market analyses.

TABLE 1

Tomatoes for Processing: Acreage, Yield, Production, and Farm Price
California and United States from 1918

Calendar year	Harvested acreage		Yield		Production		Average farm price	
	California	United States	California	United States	California	United States	California	United States
	thousand acres		tons per acre		thousand tons		dollars per ton	
1918	44.5	354.1	5.0	4.4	222.7	1,565.9	18.03	21.73
1919	44.9	277.0	7.0	4.0	314.4	1,111.1	16.35	18.50
1920	28.3	235.8	5.5	4.7	155.9	1,099.8	20.00	19.80
1921	6.9	94.3	5.4	4.8	37.0	456.9	12.57	11.65
1922	24.1	235.2	6.8	5.1	164.2	1,199.2	15.12	12.62
1923	28.3	268.7	6.2	4.3	175.5	1,165.3	15.55	13.56
1924	26.0	291.3	5.7	4.1	148.2	1,190.2	16.84	15.71
1925	30.0	255.1	6.0	5.1	180.0	1,809.2	16.29	14.79
1926	32.3	263.3	6.4	3.8	206.4	998.6	15.61	14.71
1927	28.8	268.0	6.2	4.5	178.3	1,195.9	15.00	14.31
1928	24.7	270.9	7.4	3.7	182.8	997.2	14.60	14.19
1929	41.7	329.7	5.8	4.7	241.7	1,534.7	15.20	15.25
1930	52.2	407.9	6.3	4.3	329.2	1,757.5	15.10	15.05
1931	28.1	296.1	3.1	3.3	87.1	976.4	12.80	11.80
1932	29.9	280.5	5.0	4.3	149.8	1,199.3	10.75	10.08
1933	30.5	280.2	5.4	3.9	164.5	1,081.3	12.00	11.39
1934	55.3	368.7	5.1	3.9	282.2	1,425.7	11.60	12.03
1935	69.7	471.7	4.5	3.6	313.4	1,700.2	11.50	11.73
1936	81.5	419.1	5.6	4.7	456.2	1,987.5	13.00	12.59
1937	83.0	451.0	5.4	4.3	448.4	1,926.3	14.10	13.11
1938	46.5	392.4	6.1	4.4	283.5	1,742.6	12.30	12.41
1939	57.6	358.3	6.6	5.6	380.4	1,999.9	12.60	12.14
1940	71.5	409.6	8.1	5.6	579.4	2,275.8	12.60	11.80
1941	89.9	460.5	7.5	6.1	674.6	2,802.2	14.00	15.06
1942	124.7	601.2	6.4	5.3	798.0	3,166.8	19.50	19.70
1943	112.7	555.4	7.1	4.8	800.0	2,660.9	26.20	26.28
1944	132.2	581.2	7.2	5.5	951.7	3,169.9	25.90	27.22
1945	120.8	546.8	7.5	4.9	906.0	2,689.2	25.60	27.58
1946	134.4	556.8	9.9	6.0	1,330.6	3,367.0	29.00	30.65
1947	142.9	499.8	10.0	6.5	1,429.0	3,229.4	29.00	28.67
1948	87.7	391.2	10.9	7.4	955.9	2,883.0	25.80	27.92
1949	75.4	328.0	13.3	7.6	1,002.8	2,478.2	23.20	23.89
1950	75.5	345.2	12.7	7.7	958.8	2,643.2	23.50	25.20
1951	148.3	423.8	14.9	10.1	2,210.0	4,267.1	30.20	31.40
1952	112.9	376.1	16.1	9.4	1,817.7	3,523.5	25.50	29.10
1953	83.0	297.3	17.0	10.9	1,411.0	3,234.9	22.90	27.50
1954	80.0	268.6	16.9	10.0	1,343.6	2,697.7	20.40	24.40
1955	115.0	316.8	17.3	10.2	1,989.5	3,224.5	22.90	25.00

(Continued on next page.)

Table 1 continued.

Sources:

U. S. Bureau of Agricultural Economics, Commercial Truck Crops for Processing, Summaries, 1918-1927 and 1928-1941; Commercial Truck Crops for Fresh Market and Processing, Summaries, 1939-1945 (Revised estimates, June, 1947) (Washington: Govt. Print. Off.).

For 1946-1951: U. S. Bureau of Agricultural Economics, Vegetables for Commercial Processing, Acreage, Production, Value (Revised estimates, 1918-1950) (Washington: Govt. Print. Off., June, 1953). (U. S. Department of Agriculture Statistical Bulletin No. 132.)

For 1951-1955: U. S. Bureau of Agricultural Economics, Vegetables for Commerical Processing (Washington: Govt. Print. Off.). (Annual summaries.)

For 1955: California Crop and Livestock Reporting Service, California Commerical Vegetables Crop Summary (Sacramento: State Print. Off., January 3, 1956).

TABLE 2

Tomatoes, Commercial Crop for Fresh Market: Acreage, Yield, Production, and Season Average Farm Price, California and United States from 1939

Calendar year	California					Calendar year	United States				
	Acreage for harvest	Yield per acre	Production	Price per ton	Farm value		Acreage for harvest	Yield per acre	Production a/	Price per ton	Farm value
	acres	tons	thousand tons	dollars	thousand dollars		acres	tons	thousand tons	dollars	thousand dollars
1939	25,400	4.6	118.0	63.9	7,544	1939	232,500	3.3	761.6	51.2	38,983
1940	26,900	5.2	139.2	70.4	9,793	1940	217,850	3.2	707.8	45.6	32,292
1941	29,000	5.2	150.1	73.5	11,335	1941	209,860	3.2	683.8	59.7	40,837
1942	30,100	4.8	143.4	118.4	16,978	1942	231,100	3.3	769.9	79.5	61,214
1943	30,300	5.5	166.4	129.6	21,558	1943	228,600	3.4	768.7	108.6	83,453
1944	28,400	5.5	155.5	157.2	24,450	1944	260,850	3.0	783.9	116.4	91,222
1945	34,500	5.1	175.8	180.1	31,655	1945	283,100	3.2	910.0	124.1	112,906
1946	37,400	5.4	203.0	133.0	27,009	1946	290,250	3.2	927.2	108.2	100,291
1947	31,900	6.3	200.8	161.2	32,380	1947	238,250	3.4	808.5	120.4	97,372
1948	35,400	6.1	214.4	130.2	27,922	1948	234,080	3.5	827.4	121.6	100,572
1949	28,900	6.4	185.0	114.0	21,101	1949	241,290	3.7	889.4	110.9	98,658
1950	29,400	6.7	196.6	142.2	27,967	1950	235,440	3.7	881.7	128.2	113,002
1951	31,100	7.2	223.4	148.0	33,050	1951	228,060	4.0	914.6	130.8	119,676
1952	27,000	8.1	218.8	163.2	35,720	1952	229,450	4.0	914.2	151.8	138,774
1953	27,700	8.8	244.0	144.4	35,222	1953	235,560	3.8	901.6	141.6	127,624
1954	31,700	8.1	257.2	138.2	35,550	1954	250,000	3.9	965.5	129.5	125,075

a/ Includes the following quantities not marketed and excluded in computing value: 42,000 bushels in 1940, 51,000 in 1941, 15,000 in 1942, 40,000 in 1943, 342,000 in 1945, 319,000 in 1946, 80,000 in 1948, 200,000 in 1949, and 110,000 in 1951.

Sources:

1939-1953: U. S. Department of Agriculture, Agricultural Statistics, 1954 (Washington: Govt. Print. Off., 1954), p. 247. Fresh market converted into tons (bushel = 53 pounds).

1954: U. S. Agricultural Marketing Service, Commercial Vegetables for Fresh Markets (Washington: Govt. Print. Off., 1954). (Annual summary.)

a/ [illegible] the following [illegible] marketed and exported in corresponding values: [illegible] bushels in 1940, [illegible] in 1941, [illegible] in 1942, [illegible] in 1943, [illegible] in 1944, [illegible] in 1945, 30,000 in 1946, and [illegible] in 1947.

TABLE 3

Tomatoes for Processing: Harvested Acreage in California by County from 1945

County	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
Alameda	13,023	11,657	11,912	4,893	2,935	2,918	6,899	6,272	3,495	3,635
Contra Costa	3,637	3,153	2,988	1,032	1,315	1,094	3,777	2,122	1,460	1,440
Santa Clara	6,717	6,284	6,111	2,830	1,231	1,130	4,331	2,723	2,010	1,315
Monterey and Santa Cruz	2,703	6,620	4,694	2,254	2,262	2,630	4,650	2,716	2,020	1,450
San Benito	3,218	3,097	2,674	1,470	314	315	1,224	660	765	945
Sonoma and Napa	2,557	2,348	3,006	650	486	511	1,183	872	785	335
Sacramento	13,984	13,689	14,875	7,910	9,454	8,882	15,453	12,971	8,335	9,135
Yolo	22,928	22,191	25,640	15,436	11,491	11,226	22,674	18,632	14,185	14,530
Solano	2,251	3,095	4,465	3,518	2,703	2,427	5,032	4,673	3,720	4,070
Sutter and Colusa	1,183	2,550	3,379	3,481	3,394	3,961	8,959	6,079	4,855	3,835
Butte, Yuba, and Placer	425	765	1,680	1,268	491	770	3,366	2,310	1,180	930
San Joaquin	32,387	37,711	41,715	29,281	28,371	25,799	46,199	37,925	30,465	27,430
Stanislaus	3,076	4,029	6,264	4,322	3,596	6,459	9,173	5,225	3,390	2,565
Merced	1,971	3,269	4,007	3,775	1,032	788	2,156	1,748	1,555	1,870
Madera	656	934	965	--	--	--	4	--	65	95
Fresno, Tulare, and Kern	270	2,022	366	421	220	19	639	7	--	20
Santa Barbara	1,132	2,484	1,373	253	1,315	380	106	5	30	70
Ventura	1,435	1,575	1,102	788	741	1,561	3,369	3,575	2,260	2,695
Los Angeles	2,775	2,542	1,889	1,284	1,289	1,104	2,002	461	620	610
Orange	1,335	2,146	1,623	2,046	1,428	2,164	2,823	2,338	1,325	1,800
Riverside	1,487	807	73	66	206	261	2	297	85	335
San Bernardino	1,178	812	35	11	407	252	--	200	160	95
San Diego and Imperial	449	514	1,400	717	610	817	4,138	1,079	235	295
All other	42	140	624	--	148	56	141	10	--	--
Total state	120,819	134,434	142,860	87,706	75,439	75,524	148,300	112,900	83,000	79,500

Source: California Crop and Livestock Reporting Service, Vegetable Crops in California (Sacramento: State Print. Off.) (Annual issues.)

TABLE 4

Tomatoes for Fresh Market: Season Average Farm Prices
United States and California from 1939

Year	California			United States						
	Early spring	Early summer	Early fall	Winter	Early spring	Late spring	Early summer	Late summer	Early fall	Late fall
	dollars per ton									
1939	126.4	52.8	56.6	90.6	82.2	50.6	35.8	27.5	56.6	80.4
1940	156.6	47.2	52.8	118.8	89.0	28.7	29.8	33.6	52.8	80.7
1941	149.0	52.8	60.4	120.7	110.9	47.5	43.8	42.2	60.4	103.0
1942	126.4	96.2	128.3	150.9	104.5	61.5	59.2	54.0	128.3	148.3
1943	224.5	124.5	117.0	232.0	140.0	117.3	102.6	75.5	117.0	160.0
1944	213.2	137.7	152.8	224.5	110.9	124.1	106.0	80.0	152.8	163.4
1945	211.3	181.1	173.6	186.8	118.1	108.7	134.3	90.9	173.6	155.1
1946	181.1	103.8	139.6	215.1	103.8	81.9	96.2	92.1	139.6	137.0
1947	215.1	117.0	169.8	216.9	150.5	95.8	96.2	82.2	169.8	191.7
1948	207.5	113.2	122.6	271.6	161.1	116.2	104.1	90.2	122.6	147.9
1949	150.9	100.0	124.5	230.2	134.7	75.5	87.2	81.5	124.5	146.0
1950	154.7	158.5	133.9	141.5	131.3	148.3	140.7	96.2	133.9	188.3
1951	181.1	128.3	147.1	247.1	154.3	80.4	105.6	101.9	147.1	184.5
1952	235.8	162.2	149.0	167.9	170.5	177.7	157.7	120.0	149.0	163.4
1953	188.7	167.9	122.6	177.3	147.1	196.2	149.0	110.5	122.6	180.3
1954	218.8	132.0	124.5	171.7	144.1	79.6	131.3	110.5	124.5	178.1

Sources:

U. S. Department of Agriculture, Commercial Vegetables for Fresh Market: Acreage Production, Value, Revised Estimates, 1939-1950, by Seasonal Groups and States (Washington: Govt. Print. Off., 1953), 149p. (U. S. Department of Agriculture Statistical Bulletin No. 126.) Converted to dollars per ton (bushel = 53 pounds).

U. S. Agricultural Marketing Service, Commercial Vegetables for Fresh Markets (Washington: Govt. Print. Off., 1952 and 1954). (Annual summaries.)

TABLE 5

Estimated Utilization of California Commercial Tomato Crop
Fresh Tonnage Basis from 1936-37

Marketing year	Processed packs								
	Canned tomatoes	Juice	Puree a/	Paste a/	Sauces	Catsup	Chili sauce	All other b/	Total
	thousand tons, farm weight								
1936-37	89	51	42	123	65	78	--	8	456
1937-38	77	55	38	151	39	62	--	26	448
1938-39	51	26	27	108	40	27	--	5	284
1939-40	71	30	18	122	55	48	--	36	380
1940-41	132	58	34	173	67	75	--	40	579
1941-42	158	64	44	198	70	79	--	62	675
1942-43	141	77	75	232	65	92	--	116	798
1943-44	90	104	95	251	72	87	7	94	800
1944-45	76	143	143	350	76	96	3	65	952
1945-46	57	153	160	258	96	77	--	105	906
1946-47	102	176	207	368	184	115	--	179	1,331
1947-48	146	127	91	560	129	183	20	173	1,429
1948-49	111	122	39	315	138	124	8	99	956
1949-50	96	133	64	365	136	92	8	109	1,003
1950-51	86	124	57	286	166	141	10	86	956
1951-52	181	238	135	852	259	280	20	245	2,210
1952-53	212	236	75	678	253	238	15	111	1,818
1953-54	147	219	46	524	150	188	17	120	1,411
1954-55	149	184	51	441	227	202	13	117	1,384
1955-56	193	236	85	684	274	311	20	188	1,991

a/ Includes amounts remanufactured.

b/ All other is a residual obtained by subtracting the specified products from the total tonnage processed.

Source: Pack statistics from Table 6 converted to fresh tons by using conversion factors in Table 11.

a/ Includes amounts remanufactured.

b/ Mill other is a residual obtained by subtracting the specified products from the total lumber processed.

Source: Peak statistics from Table 6 converted to trees sawn by using conversion factors in Table 11.

TABLE 6

Tomatoes and Tomato Products: California Canners' Stocks, Pack, and Shipments from 1935-36

Marketing year beginning	Canners' beginning stocks	Pack	Canner shipments	Canners' beginning stocks	Pack	Canner shipments
	thousand cases, 24 No. 2 basis					
	CANNED TOMATOES			TOMATO JUICE a/		
June 1, 1935	796	4,399	4,441	346	1,673	1,637
1936	754	4,920	4,092	382	2,671	2,051
1937	1,582	4,256	3,312	1,002	2,917	1,965
1938	2,526	2,847	4,449	1,954	1,350	2,147
1939	924	3,965	4,071	1,157	1,585	2,265
1940	818	7,357	6,303	477	3,059	2,605
1941	1,872	8,781	9,883	931	3,369	3,643
1942	770	7,819	8,196	657	4,076	4,094
1943	393	4,993	5,238	639	5,477	5,815
1944	148	4,243	4,278	301	7,503	7,389
1945	113	3,182	3,287	415	8,055	8,327
1946	8	5,683	5,120	143	9,247	7,153
1947	572	8,130	6,395	2,235	6,677	5,942
1948	2,307	6,172	6,199	2,970	6,427	7,245
1949	2,280	5,315	5,925	2,152	7,020	7,016
1950	1,670	4,800	6,336	2,156	6,546	8,029
1951	134	10,075	8,844	673	12,535	10,301
July 1, 1952	1,365	11,791	9,659	2,907	12,420	13,027
1953	3,497	8,150	8,841	2,300	11,546	11,366
1954	2,806	8,291	10,278	2,480	9,704	9,885
1955	819	10,720		2,299	12,439	
	CATSUP			CHILI SAUCE		
June 1, 1935	181	722	790	—	—	—
1936	113	2,338	2,021	—	—	—
1937	430	1,863	1,522	—	—	—
1938	771	801	1,248	—	—	—
1939	324	1,431	1,541	—	—	—
1940	214	2,258	2,079	—	—	—
1941	393	2,381	2,674	—	—	—
1942	100	2,774	2,852	—	—	—
1943	22	2,605	2,581	—	200	—
1944	46	2,869	2,888	—	89	—
1945	27	2,312	2,299	—	—	—
1946	40	3,447	3,431	—	—	—
1947	56	5,491	4,207	—	585	—
1948	1,340	3,720	3,148	162	226	243
1949	1,912	2,760	4,058	145	243	347
1950	614	4,242	4,619	41	300	332
1951	237	8,405	6,726	9	600	444
July 1, 1952	1,916	7,134	6,576	165	464	485
1953	2,474	5,638	6,381	144	498	478
1954	1,731	6,048	7,137	164	389	517
1955	642	9,317		36	589	

(Continued on next page.)

(Continued on next page)

Table 6 continued.

Marketing year beginning	Canners' beginning stocks	Pack	Canner shipments	Canners' beginning stocks	Pack	Canner shipments
	thousand cases, 24 No. 2 basis					
	PUREE			SAUCE		
June 1, 1935	113	965	948	419	1,438	1,600
1936	130	1,410	1,206	257	2,160	1,682
1937	334	1,277	1,022	735	1,291	1,042
1938	589	894	1,179	984	1,350	1,959
1939	304	610	732	375	1,845	1,545
1940	182	1,124	1,052	675	2,287	1,953
1941	254	1,465	1,472	1,009	2,351	2,708
1942	247	2,504	2,640	652	2,160	2,170
1943	111	3,164	3,165	642	2,405	2,601
1944	110	4,771	4,785	446	2,545	2,805
1945	96	5,328	5,358	186	3,188	3,071
1946	66	6,899	6,071	303	6,142	5,781
1947	896	3,037	2,553	664	4,287	3,564
1948	1,380	1,314	2,145	1,387	4,615	4,322
1949	549	2,128	2,387	1,680	4,540	5,354
1950	290	1,894	2,152	866	5,547	6,314
1951	32	4,512	2,949	99	8,627	7,471
July 1, 1952	1,595	2,508	2,635	1,255	8,430	6,407
1953	1,468	1,525	2,412	3,278	5,000	6,883
1954	581	1,703	2,204	1,395	7,581	8,587
1955	80	2,842		389	9,145	
	PASTE			UNSPECIFIED		
June 1, 1935	18	996	1,002	—	145	131
1936	12	1,512	1,477	14	315	281
1937	47	1,853	—	48	409	369
1938	—	1,330	—	88	289	316
1939	—	1,496	—	61	507	461
1940	—	2,128	—	107	188	237
1941	—	2,441	—	58	298	328
1942	—	2,848	—	28	294	224
1943	—	3,092	—	98	254	334
1944	—	4,302	—	18	289	285
1945	—	3,175	—	22	463	485
1946	—	4,541	—	0	489	485
1947	—	6,919	—	4	185	163
1948	2,044	3,893	4,930	26	163	147
1949	1,007	4,502	4,667	42	234	266
1950	842	3,535	4,271	10	335	342
1951	106	10,525	8,689	3	1,200	793
July 1, 1952	1,942	8,366	7,435	410	318	554
1953	2,873	6,464	7,979	174	306	355
1954	1,358	5,443	6,316	125	400	476
1955	485	8,444		49	593	

a/ Including vegetable juice consisting of 70 per cent or more tomato juice.

Source: Stocks and packs--figures in actual cases from Canners League of California, mimeographed releases and bulletins, converted into 24 No. 2 equivalents by use of conversion factors in Table 11. Canner shipments derived from stocks and packs.

June 1, 1955	115	985	945	449	1,450
1955	130	1,410	1,206	387	2,160
1957	364	1,277	1,026	756	1,821
1958	589	864	1,175	904	1,886
1959	904	610	722	375	1,645
1960	192	1,124	1,052	876	2,827
1961	274	1,955	1,472	1,009	2,861
1962	241	2,564	2,640	452	2,140
1964	110	4,171	4,758	446	2,845
1965	98	5,325	4,518	180	3,188
1966	41	5,929	6,071	815	3,422
1967	895	5,057	2,556	464	4,247
1968	1,450	1,314	2,145	1,857	4,115
1969	540	1,105	2,527	1,880	4,140
1970	280	1,164	3,152	866	5,545
1971	32	4,312	2,940	99	8,027
July 1, 1962	1,405	2,348	2,555	1,255	8,450
1963	1,480	1,195	2,424	3,279	7,100
1964	521	1,703	2,204	1,394	7,521
1965	30	2,912		389	9,146

FEMALE

June 1, 1955	18	900	1,022	—	
1956	16	1,412	1,477	14	
1957	47	1,855	—	48	
1958	—	1,380	—	88	
1959	—	—	—	—	
1960	—	2,122	—	107	
1961	—	—	—	70	
1962	—	2,842	—	38	
1963	—	3,002	—	68	
1964	—	4,302	—	18	
1965	—	3,175	—	22	
1966	—	4,341	—	0	
1967	—	3,219	—	4	
1968	2,044	3,315	4,240	20	
1969	1,017	4,302	4,387	42	
1970	842	3,325	4,271	13	
1971	102	10,125	3,329	8	
July 1, 1962	1,322	3,386	7,450	230	
1963	2,275	6,454	7,370	176	
1964					
1965	455	5,444		49	

a. Assuming vegetable [illegible]

Source: Stocks and packs--Figures in actual cases from Canners. Pack of c[illegible] equivalents by use of conversion factors in Table II. Derived from stocks and packs.

TABLE 7

California Canners' Prices for Canned Tomatoes and Products from 1926-27
(Published f.o.b. quotation in first week of January of marketing year
for all products prices shown, except for sauce and catsup
for which the prices are published opening prices)

Marketing year	Canned tomatoes (standard, No. 2½)	Canned tomato juice (fancy, No. 2)	Paste (6-ounce can)a/	Sauce (Del Monte 8-ounce can)	Catsup (Del Monte 14-ounce glass)
	1	2	3	4	5
	dollars per dozen				
1926-27	1.00	--	--	.50	1.75
1927-28	1.00	--	--	.45	1.75
1928-29	1.15	--	--	.45	1.75
1929-30	1.225	--	--	.475	1.70
1930-31	1.00	--	--	.475	1.65
1931-32	.95	.95	.42	.45	1.35
1932-33	.80	.80	.36	.375	1.20
1933-34	1.10	.85	.39	.45	1.40
1934-35	1.05	.85	.42	.425	1.25
1935-36	.925	.75	.42	.40	1.20
1936-37	.875	.75	.48	.40	1.20
1937-38	.875	.725	.46	.40	1.225
1938-39	.825	.725	.39	.375	1.125
1939-40	1.00	.75	.39	.40	1.30
1940-41	.875	.70	.40	.375	1.175
1941-42	1.20	.80	.51	.42	1.275
1942-43	1.25	.90	.64	.50	1.40
1943-44	1.325	.94	.67	.52	1.46
1944-45	1.35	.93	.70	.555	1.465
1945-46	1.58	.96	.70	.555	1.50
1946-47	2.00	1.20	.70	.675	1.95
1947-48	1.90	1.025	.64	.615	1.95
1948-49	1.80	1.05	.89	.60	1.85
1949-50	1.60	1.025	.89	.60	1.45
1950-51	--	1.15	.90	.60	1.80
1951-52	1.95	1.15	1.19	.69	1.875
1952-53	1.95	1.10	.99	.70	1.65
1953-54	1.75	1.05	.935	.70	1.525
1954-55	1.75	1.05	.91	.725	1.675
1955-56	1.85	1.15	.91	.750	1.90

a/ Case of 100 cans for 1931-1947 and 48 cans for 1947-1952 converted to 12-can equivalents.

Sources:

Cols. 1 and 2: California Fruit News. (Weekly issues.)

Col. 3: Western Canner and Packer, Yearbook and Statistical Number, 1937 and 1943, except estimate of S. W. Shear for 1937 and 1938, and Commercial Bulletin for 1943-1954 (January quotations, Los Angeles).

Cols. 4 and 5: California Packing Corporation, Calpack Annual, 1938 and 1952, opening prices and trade information.

Cols. 1 and 2: California Fruit News. (Weekly issues.)

Cols. 4 and 5: California Packing Corporation, Calpack Annual, 1938 and 1952, opening prices and trade information.

TABLE 8

United States Per-Capita Consumption of Tomatoes and Tomato Products in Net Canned Weight

Calendar year	Canned whole tomatoes	Catsup and chili sauce	Paste and sauce	Pulp and puree	Tomato and other vegetable juices[a]	Total processed (columns 1-5)
	1	2	3	4	5	6
	pounds per capita, net canned weight					
1925	6.9	---	0.4	0.7	---	8.0
1926	6.7	2.1	0.4	0.7	---	9.9
1927	5.3	1.8	0.3	0.6	---	8.0
1928	5.4	1.6	0.3	0.6	---	7.9
1929	5.8	1.8	0.3	0.6	---	8.5
1930	6.5	1.8	0.4	1.0	0.2	9.9
1931	5.7	1.7	0.2	0.8	.6	9.0
1932	5.1	1.6	0.2	0.5	1.1	8.5
1933	5.4	1.5	0.4	0.6	1.1	9.0
1934	5.4	1.5	0.4	0.7	1.1	9.1
1935	5.6	1.6	0.5	0.8	1.6	10.1
1936	5.7	1.6	0.4	0.8	2.4	10.9
1937	5.6	1.6	0.5	0.8	3.0	11.5
1938	5.8	1.8	0.7	0.7	2.8	11.8
1939	5.7	2.1	0.7	0.6	2.6	11.7
1940	5.8	2.5	0.8	0.7	2.9	12.7
1941	5.9	2.5	0.9	0.6	3.6	13.5
1942	6.1	2.4	1.1	0.7	4.4	14.7
1943	5.5	1.7	1.5	1.2	4.1	14.0
1944	4.8	2.0	1.9	1.4	2.9	13.0
1945	4.1	2.4	2.7	2.1	6.9	18.2
1946	4.0	2.8	3.0	2.1	5.1	17.0
1947	3.8	2.7	2.7	1.5	3.8	14.5
1948	4.4	2.2	2.3	0.5	4.2	13.6
1949	4.6	2.5	2.2	0.6	4.4	14.3
1950	5.0	2.7	2.4	0.7	4.9	15.7
1951	4.8	2.5	3.3	0.8	4.6	16.0
1952	4.1	2.7	2.6	0.9	5.1	15.4
1953	4.4	2.7	2.9	0.8	5.4	16.2
1954[b]	4.5	2.8	2.6	0.5	5.0	15.4

(Continued on next page.)

TABLE 5

United States Per-capita Consumption of Sweetener and Tonnage Production in Net Sugared Weight

Calendar year	Sugar made from sugar cane	Grasp and sugar beet sugar	Fruits and juice	Fruit and juice	Honey and other vegetable juices	Total processed (column 1)
	I					
	Pounds					
1925	5.8	—	0.4	0.7	—	
1926	5.7	0.1	0.4	0.7	—	
1927	5.3	1.8	0.5	0.6	—	
1928	7.4	1.5	0.5	0.4	—	7.8
1929	5.6	1.8	0.5	0.5	—	8.[illegible]
1930	6.5	1.8	0.4	1.0	0.2	9.9
1931	5.7	1.7	0.2	0.6	.0	[illegible]
1932	5.1	1.5	0.2	0.5	1.1	8.5
1933	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1934	5.4	1.5	0.4	0.7	1.1	[illegible]
1935	5.5	1.0	0.5	0.5	1.8	[illegible]
1936	5.7	1.5	0.4	0.5	2.4	10.4
1937	5.5	1.6	0.5	0.8	3.0	[illegible]
1938	5.8	1.5	0.7	0.7	2.5	11.6
1939	5.7	2.1	0.7	0.6	2.0	11.7
1940	5.8	2.5	0.8	0.7	2.0	12.7
1941	6.0	2.5	0.9	0.6	2.5	[illegible]
1942	6.1	2.4	1.1	0.7	4.4	[illegible]
1943	5.5	1.7	1.5	1.2	4.1	14.0
1944	4.8	2.0	1.9	1.4	2.9	13.0
1945	4.1	2.4	2.7	2.1	3.3	[illegible]
1946	4.0	2.8	3.0	2.1	5.1	17.0
1947	3.8	2.7	2.7	1.5	3.8	14.5
1948	4.4	2.2	2.5	0.5	4.2	[illegible]
1949	4.6	2.5	2.2	0.8	4.4	[illegible]
1950	5.0	2.7	2.4	0.7	4.2	[illegible]
1951	4.8	2.5	2.5	0.8	4.[illegible]	[illegible]
1952	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1953	4.4	2.7	2.2	[illegible]	—	[illegible]
1954	4.5	2.8	2.5	[illegible]	—	[illegible]

(Continued on next page.)

Table 8 continued.

a/ Tomato juice comprises approximately 85 per cent of the total; combination vegetable juice, 13 per cent; and other vegetable juices, 2 per cent. Combination vegetable juice contains approximately 70 per cent or more tomato juice.

b/ Preliminary.

Sources:

1925-1951: U. S. Bureau of Agricultural Economics, Consumption of Food in the United States 1909-52 (Washington: Govt. Print. Off., 1953), Table 18. (Agricultural Handbook No. 62.)

1952-53: Revised supplement for 1953 to "Consumption of Food in the United States, 1909-52," see U. S. Agricultural Marketing Service, National Food Situation (Washington: Govt. Print. Off., August 2, 1954). (NFS-69.)

1954: U. S. Agricultural Marketing Service, The Vegetable Situation (Washington: Govt. Print. Off., November, 1955).

TABLE 9

United States Per-Capita Consumption of Tomatoes and Tomato Products in Farm Weight Equivalent

Calendar year	Canned whole tomatoes	Catsup and chili sauce	Paste and sauce	Pulp and puree	Tomato and other vegetable juices[a]	Total processed	Fresh market
	pounds per capita, net farm weight equivalent						
1925	13.1	--	1.8	2.2	--	17.1	12.4
1926	12.7	5.6	1.8	2.2	--	22.3	10.4
1927	10.0	4.8	1.3	1.9	--	18.0	12.1
1928	10.2	4.2	1.3	1.9	--	17.6	11.8
1929	11.0	4.8	1.3	1.9	--	19.0	13.3
1930	12.3	4.8	1.8	3.2	0.3	22.4	12.7
1931	10.8	4.5	0.9	2.5	1.0	19.7	12.2
1932	9.6	4.2	0.9	1.6	1.8	18.1	13.3
1933	10.2	4.0	1.8	1.9	1.8	19.7	12.3
1934	10.2	4.0	1.8	2.2	1.8	20.0	13.3
1935	10.6	4.2	2.2	2.5	2.7	22.2	13.8
1936	10.8	4.2	1.8	2.5	4.0	23.3	12.5
1937	10.6	4.2	2.2	2.5	5.0	24.5	12.6
1938	11.0	4.8	3.1	2.2	4.7	25.8	13.7
1939	10.8	5.6	3.1	1.9	4.3	25.7	13.9
1940	11.0	6.6	3.5	2.2	4.8	28.1	13.1
1941	11.2	6.6	4.0	1.9	6.0	29.7	12.9
1942	11.5	6.4	4.9	2.2	7.3	32.3	14.1
1943	10.4	4.5	6.6	3.8	6.8	32.1	14.4
1944	9.1	5.3	8.4	4.5	4.8	32.1	14.8
1945	7.8	6.4	12.0	6.7	11.5	44.4	17.0
1946	7.6	7.4	13.3	6.7	8.5	43.5	16.4
1947	7.2	7.2	12.0	4.8	6.3	37.5	14.7
1948	8.3	5.8	10.2	1.6	7.0	32.9	14.9
1949	8.7	6.6	9.7	1.9	7.3	34.2	14.0
1950	9.5	7.2	10.6	2.2	8.2	37.7	13.4
1951	9.1	6.6	14.6	2.5	7.7	40.5	13.8
1952	7.8	7.2	11.5	2.9	8.5	37.9	13.7
1953	8.3	7.2	12.8	2.5	9.0	39.8	13.3
1954[b]	8.5	7.4	11.5	1.6	8.3	37.3	13.4

a/ Tomato juice comprises approximately 85 per cent of the total; combination vegetable juice, 13 per cent; and other vegetable juices, 2 per cent. Combination vegetable juice contains approximately 70 per cent or more tomato juice.

b/ Preliminary.

Source:

Table 8 was converted by the following factors from U. S. Department of Agriculture, Production and Marketing Administration, Conversion Factors and Weights and Measures for Agricultural Commodities and Their Products (Table 63, column 1) (Washington: May, 1952), 96p. Processed.

For canned whole tomatoes, 1.892; catsup and chili sauce, 2.650; paste and sauce, 4.428; pulp and puree, 3.186; and tomato and other vegetable juices, 1.666.

TABLE 10

United States Foreign Trade in Canned Tomatoes and Products from 1922-23

Year beginning July 1	Imports		Domestic exports[a]			
	Canned tomatoes[b]	Tomato paste	Canned tomatoes	Tomato paste	Catsup and table sauces	Tomato juice
	million pounds processed weight					
1922-23	20.2	—	8.9	0.0	--	0.0
1923-24	32.3	4.2	9.2	0.0	3.6	0.0
1924-25	83.3	17.4	5.2	0.0	5.5	0.0
1925-26	84.9	18.2	5.8	0.0	5.0	0.0
1926-27	80.3	15.6	7.5	0.0	7.6	0.0
1927-28	103.8	12.1	6.7	0.0	8.6	0.0
1928-29	114.0	9.5	4.0	0.0	13.1	0.0
1929-30	147.4	16.5	4.9	0.0	10.4	0.0
1930-31	75.2	11.6	2.9	0.0	5.2	0.0
1931-32	91.6	12.2	4.6	0.0	3.2	0.0
1932-33	72.2	11.4	4.0	0.0	2.6	0.0
1933-34	76.0	11.4	1.9	0.0	2.7	0.0
1934-35	76.3[c]	12.2[c]	2.0	0.0	3.1	0.0
1935-36	65.0	8.5	1.8	0.0	3.5	0.0
1936-37	61.4	10.5	2.5	0.5	3.9	2.0
1937-38	55.4	8.3	1.8	7.5	3.8	3.3
1938-39	71.6	8.6	2.0	3.9	4.7	2.7
1939-40	37.5	6.9	11.8	8.6	3.9	3.0
1940-41	1.9	0.3	21.8	5.9	5.0	2.5
1941-42	11.0	0.0	107.4	8.6	4.1	4.7
1942-43	3.1	0.4	8.3	16.5	2.2	2.7
1943-44	0.0	2.5	26.9	23.8	1.4	1.0
1944-45	4.6	3.0	34.7	26.8	1.9	1.2
1945-46	0.5	0.1	8.9	9.9	7.2	91.7
1946-47	14.8	1.1[d]	2.0	17.6	6.7	27.2
1947-48	29.0	0.5	12.8	23.9	14.4	10.6
1948-49	34.6	1.2	3.9	19.1	6.9	6.9
1949-50	41.8	3.3	1.5	17.7	6.5	8.6
1950-51	73.2	25.7	1.2	17.9	5.4	13.6
1951-52	54.8	8.4	20.3	22.1	18.3	31.6
1952-53	60.4	3.8	4.0	12.7	23.1	37.2
1953-54	58.7	2.0	1.4	24.0	25.3	29.5

(Continued on next page.)

TABLE 10

United States Foreign Trade in Canned Tomatoes and Products from 1924-25

Year beginning July 1	Canned tomatoes	Tomato paste	Canned spaghetti	Tomato juice	Tomato and table sauces	Tomato juice
	Thousand pounds					
1924-25	20.8	—	0.0	0.0	—	[illegible]
1925-26	38.5	4.8	0.2	0.0	8.4	[illegible]
1926-27	88.5	11.4	5.2	0.0	5.5	[illegible]
1927-28	81.0	12.3	5.8	0.0	5.0	[illegible]
1928-29	80.5	15.8	1.5	0.0	7.3	[illegible]
1929-30	100.6	18.1	6.7	0.0	8.4	[illegible]
1930-31	1.6.0	0.7	[illegible]	0.0	12.1	[illegible]
[illegible]	187.4	18.6	[illegible]	0.0	10.4	[illegible]
1932-33	78.2	11.5	2.7	0.0	8.2	[illegible]
1933-34	[illegible]	12.2	1.0	0.0	8.0	[illegible]
1934-35	[illegible]	11.4	[illegible]	0.0	2.8	[illegible]
1935-36	78.0	11.4	1.0	0.0	1.7	[illegible]
1936-37	[illegible]	12.5	2.0	0.0	3.1	[illegible]
1937-38	60.0	6.5	[illegible]	0.0	3.5	[illegible]
1938-39	41.4	10.5	2.1	0.5	[illegible]	[illegible]
1939-40	[illegible]	8.8	1.1	7.5	5.6	[illegible]
1940-41	74.1	5.8	2.0	8.8	4.7	[illegible]
1941-42	57.8	4.9	11.5	7.4	8.0	[illegible]
1942-43	1.0	0.5	21.0	5.9	5.0	[illegible]
1943-44	11.0	0.0	10.4	8.5	4.1	[illegible]
1944-45	5.1	0.4	6.3	16.5	2.5	[illegible]
1945-46	0.0	2.5	20.0	28.3	1.4	[illegible]
1946-47	4.5	5.0	34.7	20.8	[illegible]	[illegible]
1947-48	0.6	0.1	4.0	0.0	[illegible]	[illegible]
1948-49	12.3	1.1	2.0	[illegible]	6.7	[illegible]
1949-50	2.0	0.7	14.6	[illegible]	14.4	[illegible]
1950-51	[illegible]	[illegible]	8.9	10.1	8.0	[illegible]
1951-52	[illegible]	8.5	1.5	21.7	[illegible]	[illegible]
1952-53	76.6	23.7	1.2	17.0	5.4	15.6
1953-54	[illegible]	3.4	20.3	23.1	18.8	30.0
1954-55	90.4	0.6	0.0	18.7	25.1	37.0
1955-56	55.7	[illegible]	1.4	24.0	25.3	2[illegible]

(Continued on next page.)

Table 10 continued.

a/ Includes exports for military-civilian feeding programs abroad beginning 1945-46.

b/ Includes otherwise prepared--if any.

c/ Imports for consumption only beginning 1934.

d/ Paste and sauce.

Sources:

U. S. Department of Agriculture, Yearbook of Agriculture (Washington: Govt. Print. Off., 1932), Table 251 (for years 1923-1928) and Agricultural Statistics, 1945 (Washington: Govt. Print. Off., 1945), Table 319 (for years 1929-1944); U. S. Bureau of Census, United States General Imports of Merchandise (Washington: Govt. Print. Off., July, 1945 through May, 1954). (Monthly issues.)

1946 and following: U. S. Department of Agriculture, Agricultural Statistics, 1954 (Washington: Govt. Print. Off., 1954), p. 247.

TABLE 11

A. Conversion Factors, 24 No. 2 Case Equivalents

Container description	Equivalent of a case of 24 No. 2 cans
48/ 1 tall's	1.624
48/300's	1.482
24/2½'s	1.452
24/2 tall's	1.406
1/5 gallon	1.402
6/10's	1.334
No. 211 cylinder (48/12 ounce)	1.330
No. 3 cylinder (12/46 ounce)	1.258
72/8-ounce tall's	1.263
100/6 ounce	1.226
4/1 gallon's	1.200
96/6 ounce	1.176
72/8-ounce short's	1.158
48/1 picnic's	1.066
48/8-ounce tall's	0.842
24/303's	0.822
48/8-ounce short's	0.772
24/14 ounce	0.663
24/12 ounce	0.568
24/10 ounce	0.470
24/8 ounce	0.379
48/8 ounce	0.758
12/12 ounce	0.284
48/individual juice cans (5½-6 ounce)	0.588

Source:
U. S. Department of Agriculture, Production and Marketing Administration, Conversion Factors and Weights and Measures for Agricultural Commodities and Their Products (Washington: May, 1952), 96p. Processed.

B. Approximate Conversion Factors--Tomatoes for Processing[a]

Product	Cases of 24 No. 2 cans per ton farm weight		Pounds farm weight per case of 24 No. 2 cans	
	California	United States	California	United States
Canned tomatoes	55.6	35.0	36.0	57.2
Tomato juice	52.6	47.6	38.0	42.0
Tomato puree	33.3	37.0	60.0	54.0
Tomato paste	12.3	12.3	162.0	162.0
Tomato sauce	33.3	37.0	60.0	54.0
Catsup and chili sauce	30.0	20.0	66.7	100.0
Tomato soup	--	37.0	--	54.0
All products[b]	31.6	32.3	63.3	61.9

(Continued on next page.)

Table 11 continued.

a/ These factors should be considered only as rough averages. The true figures vary widely in different regions and at different times and for different packs.

b/ Based on pack distribution in 1941-1945 with estimates for miscellaneous products included.

Sources:

For California--Canners League of California, converted to No. 2 can basis.

For United States--U. S. Department of Agriculture, War Food Administration, Conversion Factors and Weights and Measures for Agricultural Commodities and Their Products (Washington: 1944). Processed.

TABLE 12

F.O.B. Prices of California Canned Tomatoes and Related Economic Variables

Marketing year[a]	F.o.b. prices of canned tomatoes (standard, No. 2)	California canners' pack and movement, canned tomatoes	Index of United States disposable income	Price index of competing canned vegetables	Price index of competing tomato products	Other states' movements of canned tomatoes
	1	2	3	4	5	6
	dollars per dozen	millions of cases, 24 No. 2's	1947-1949 = 100			millions of actual cases
1926-27	0.875	4.467	38.0	230.1	216	12.949
1927-28	0.838	4.080	38.2	241.6	204	19.511
1928-29	0.882	3.186	40.1	228.9	182	12.299
1929-30	0.914	4.123	41.7	216.7	174	21.201
1930-31	0.820	5.943	36.5	229.3	210	16.918
1931-32	0.743	2.677	29.6	225.9	272	13.603
1932-33	0.683	3.324	24.8	275.0	244	16.482
1933-34	0.852	2.841	25.9	299.0	229	16.688
1934-35	0.852	3.968	29.2	298.2	230	15.882
1935-36	0.769	4.441	33.1	234.3	189	21.096
1936-37	0.721	4.092	36.6	232.0	179	17.375
1937-38	0.714	3.312	36.4	193.2	185	19.130
1938-39	0.673	4.449	36.2	163.5	156	17.689
1939-40	0.773	4.071	38.9	168.9	153	18.743
1940-41	0.758	6.303	44.2	152.2	140	21.195
(War years)						
1947-48	1.536	6.395	95.0	104.8	100	17.762
1948-49	1.455	6.199	101.9	99.4	102	15.912
1949-50	1.306	5.925	103.2	96.1	98	15.313
1950-51	1.638	6.336	115.8	86.3	92	16.034
1951-52	1.580	8.844	123.4	81.0	99	19.452
1952-53	1.559	9.659	130.8	76.5	88	14.103
1953-54	1.395	8.841	134.4	74.2	81	14.343
1954-55	1.350	10.278	138.4	68.1	78	13.235

(Continued on next page.)

TABLE 12

[illegible]

	F.o.b. prices of canned tomatoes (standard, No. 2)	Wholesale commodity prices (canned goods and vegetables, canned tomatoes)	Index of United States disposable income	Farm to index of canned vegetables	[illegible] of canning tomato processors
	1	2	3	4	5
	dollars per dozen	1947-1949 = 100			
1926-27	0.875	4.467	76.0	240.1	[illegible]
1927-28	0.[illegible]	4.[illegible]	74.2	244.6	[illegible]
1928-29	0.[illegible]	5.786	80.1	246.9	[illegible]
1929-30	0.[illegible]	4.[illegible]	84.7	246.7	[illegible]
1930-31	0.830	3.[illegible]	76.[illegible]	239.3	[illegible]
1931-32	0.745	2.[illegible]	62.[illegible]	215.9	[illegible]
1932-33	0.695	3.924	74.6	217.0	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1939-40	0.775	4.[illegible]	94.5	168.[illegible]	[illegible]
1940-41	0.798	6.[illegible]	94.2	172.2	[illegible]
1941-42	1.[illegible]	6.395	95.0	184.8	[illegible]
1942-43	1.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1943-44	1.[illegible]	5.[illegible]	105.2	96.4	[illegible]
1944-45	1.438	6.[illegible]	115.8	86.5	[illegible]
1945-46	1.[illegible]	6.444	124.4	81.0	[illegible]
1946-47	1.759	8.[illegible]	120.8	76.5	[illegible]
1947-48	1.[illegible]	[illegible]	124.4	[illegible]	[illegible]
1948-49	1.[illegible]	4.[illegible]	124.4	80.4	[illegible]

[illegible]

Table 12 continued.

a/ June-May prior to 1952-53; July-June for 1952-53 and following years.

Sources:

Col. 1: California Fruit News. For years 1926-27 through 1940-41 based on week ending nearest the 15th of the month; 1947-48 through 1949-50, first and third weeks of months; and 1950-51 through 1954-55 based on weekly prices. Marketing year, June 1-May 31.

Col. 2: For years 1926-27 through 1930-31, pack from Canners League of California. For years 1931-32 through 1937-38 and 1952-53 through 1954-55, shipments from Canners League of California. For years 1938-39 through 1951-52, shipments from National Canners Association. From 1935-36 shipments reported in terms of 24 No. 2 basis; prior to 1935-36 shipments or packs originally reported in terms of actual cases converted to 24 No. 2 basis by multiplying by factor of 1.4. Marketing year, July 1-June 30.

Col. 3: See Table 15, column 4.

Col. 4: See Table 15 for sources and methods of construction.

Col. 5: See Table 17 for sources and methods of construction.

Col. 6: National Canners Association for 1926-27 to 1929-30 packs, California Packing Corporation for 1930-31 to 1954-55 movements.

COL. 2: See Table 11 for courses and language of construction.

COL. 4: See Table 11 for courses and language of construction.

COL. 5: See Table 11, column 4.

TABLE 13

Actual and Estimated F.O.B. Prices of California Canned Tomatoes

Marketing year	F.o.b. prices of California canned tomatoes: Actual price	F.o.b. prices of California canned tomatoes: Estimated price	Difference: column 1 minus column 2	Percentage difference: column 3 as per cent of column 1
	1	2	3	4
	dollars per dozen, standard, No. 2			per cent
1926-27	0.875	0.883	- 0.8	- 1
1927-28	0.838	0.926	- 8.8	-10
1928-29	0.882	0.958	- 7.6	- 8
1929-30	0.914	0.943	- 2.9	- 3
1930-31	0.820	0.810	1.0	1
1931-32	0.743	0.678	6.5	9
1932-33	0.683	0.625	5.8	8
1933-34	0.852	0.738	11.4	13
1934-35	0.852	0.824	2.8	3
1935-36	0.769	0.765	0.4	1
1936-37	0.721	0.861	-14.0	-19
1937-38	0.714	0.773	- 5.9	- 8
1938-39	0.673	0.665	0.8	1
1939-40	0.773	0.755	1.8	2
1940-41	0.758	0.782	- 2.4	- 3
(War years)				
1947-48	1.536	1.374	16.2	-10
1948-49	1.455	1.430	2.5	2
1949-50	1.306	1.439	-13.3	-10
1950-51	1.638	1.513	12.5	8
1951-52	1.580	1.503	7.7	5
1952-53	1.559	1.527	3.2	2
1953-54	1.395	1.565	-17.0	-12
1954-55	1.350	1.545	-19.5	-14

Sources:

Col. 1: Table 12, column 1.

Col. 2: Estimated by use of data in Table 12 applied to equation 1 in Table 18.

TABLE 14

F.O.B. Prices and United States Packs and Canners' Shipments of Canned Vegetables

Marketing year	Prices of competing vegetables, f.o.b. cannery			United States packs and canner shipments		
	Corn (fancy, No. 303)	Peas (fancy, No. 303)	Beans (fancy, No. 2)	Corn	Peas	Beans
	1	2	3	4	5	6
	dollars per dozen			thousands of cases, 24 No. 2 basis		
1926-27	1.24	1.73	1.53	19,069	17,709	4,037
1927-28	1.35	1.66	1.77	10,347	12,936	4,677
1928-29	1.28	1.66	1.89	14,497	17,943	6,215
1929-30	1.29	1.79	1.45	17,487	18,530	8,525
1930-31	1.23	1.61	1.26	15,692	22,035	8,251
1931-32	.86	1.61	.96	19,415	13,286	6,067
1932-33	.75	1.62	.90	9,358	10,367	4,024
1933-34	.94	1.71	1.07	10,193	12,893	5,532
1934-35	1.20	1.83	1.08	11,268	15,742	6,300
1935-36	.96	1.70	1.04	21,471	24,699	7,161
1936-37	1.23	1.71	1.22	14,621	16,553	6,629
1937-38	.91	1.56	.99	23,541	23,467	10,052
1938-39	.80	1.24	.83	20,470	25,459	10,915
1939-40	.88	1.41	.95	14,567	16,074	8,487
1940-41	.88	1.35	1.01	15,524	25,196	9,798
(War years)						
1947-48	1.55	1.75	1.80	26,167	30,197	14,303
1948-49	1.60	1.74	1.89	27,897	26,263	15,071
1949-50	1.50	1.75	1.84	27,409	26,011	19,237
1950-51	1.52	1.67	1.92	24,068	30,243	21,323
1951-52	1.60	1.68	1.84	25,544	30,788	18,522
1952-53	1.61	1.74	1.77	30,760	27,625	18,350
1953-54	1.52	1.75	1.84	28,359	27,178	20,698
1954-55	1.35	1.75	1.76	30,468	26,112	21,260

(Continued on next page.)

Table 14 continued.

Sources:

Cols. 1, 2, and 3: Canning Trade, weekly issues, and trade information for years 1926-27 through 1940-41. For years from 1947-48 and following, cannery prices reported in U. S. Bureau of Labor Statistics, "Wholesale Prices, Revised Index, 1947-48 = 100, Prices and Price Relatives for Individual Products" (corn, Code No. 02-43-06; peas, Code No. 02-43-11; and beans, Code No. 02-43-17). Prior to 1947-48, reported prices of corn, standard, No. 2, and of peas, fancy, No. 2, were multiplied by factor 1.25 to adjust to equivalent prices of corn, fancy, No. 303, and peas, fancy, No. 303; also, prior to 1947-48, reported prices of beans, standard, No. 2, were multiplied by factor of 1.50 to adjust to equivalent prices of beans, fancy, No. 2. Marketing year, June 1-May 31.

Cols. 4, 5, and 6: For years 1926-27 through 1940-41, packs as published in National Canners' Association, "Canned Food Pack Statistics, 1951"; for years from 1947-48 and following, shipments from National Canners Association in actual cases converted to No. 2 basis as recorded by California Packing Corporation.

TABLE 15

Construction of Index of Prices of Canned Vegetables Competing with Canned Tomatoes

Marketing year	Weighted average prices of competing canned vegetables		United States disposable income		Index of competing canned vegetable prices, 1947-1949 = 100
	Dollars per dozen	Relatives, 1947-1949 = 100	Billions of dollars	Index, 1947-1949 = 100	
	1	2	3	4	5
1926-27	1.4813	87.45	71.3	38.0	230.1
1927-28	1.5637	92.31	71.6	38.2	241.6
1928-29	1.5545	91.77	75.1	40.1	228.9
1929-30	1.5305	90.35	78.1	41.7	216.7
1930-31	1.4175	83.68	68.4	36.5	229.3
1931-32	1.1327	66.87	55.4	29.6	225.9
1932-33	1.1552	68.20	46.5	24.8	275.0
1933-34	1.3120	77.54	48.4	25.9	299.0
1934-35	1.4750	87.08	54.8	29.2	298.2
1935-36	1.3135	77.54	62.1	33.1	234.3
1936-37	1.4384	84.92	68.6	36.6	232.0
1937-38	1.1914	70.33	68.3	36.4	193.2
1938-39	1.0028	59.20	67.9	36.2	163.5
1939-40	1.1129	65.70	72.9	38.9	168.9
1940-41	1.1396	67.28	82.8	44.2	152.2
(War years)					
1947-48	1.6860	99.53	178.0	95.0	104.8
1948-49	1.7162	101.32	190.9	101.9	99.4
1949-50	1.6795	99.15	193.4	103.2	96.1
1950-51	1.6927	99.93	217.1	115.8	86.3
1951-52	1.6923	99.91	231.3	123.4	81.0
1952-53	1.6950	100.06	245.2	130.8	76.5
1953-54	1.6888	99.70	251.9	134.4	74.2
1954-55	1.5961	94.23	259.4	138.4	68.1

(Continued on next page.)

Table 15 continued.

Sources:

Col. 1: F.o.b. prices given in Table 14 weighted by their corresponding packs and domestic movements given in Table 14.

Col. 2: Column 1 figures expressed as percentages with 1947-1949 = 100.

Col. 3: For years 1926-27 through 1928-29, average of calendar year figures for nonagricultural net income as adjusted from U. S. Department of Commerce estimates and as reported in U. S. Bureau of Agricultural Economics, The Farm Income Situation, December, 1952-January, 1953. For years beginning with 1929-30 through 1954-55, disposable personal income as reported in U. S. Department of Commerce, Office of Business Economics, Survey of Current Business; however, personal disposable income figures from years 1939-40 through 1951-52 were revised on basis of new data contained in National Income, 1954 edition, a supplement to the Survey of Current Business.

Col. 4: Column 3 figures expressed as percentages with 1947-1949 = 100.

Col. 5: Column 2 as per cent of column 4.

TABLE 16

F.O.B. Prices and California Packs and Canners' Shipments of Tomato Products

Marketing year	Prices of competing tomato products f.o.b. California			California packs and canners' shipments		
	Juice, fancy, No. 2	Paste, 6-ounce cans	Sauce, 8-ounce cans	Juice	Paste	Sauce
	1	2	3	4	5	6
	dollars per dozen			thousands of actual cases		
1926-27	1.00[a]	0.50[a]	0.500	300[a]	100[a]	350[a]
1927-28	0.95[a]	0.47[a]	0.450	325[a]	100[a]	350
1928-29	0.95[a]	0.45[a]	0.450	350[a]	100[a]	560[a]
1929-30	0.95[a]	0.45[a]	0.475	375[a]	100[a]	770
1930-31	0.95[a]	0.45[a]	0.475	400[a]	100[a]	567[a]
1931-32	0.95	0.42	0.450	420	97	363
1932-33	0.80	0.36	0.375	599	200	1,027[a]
1933-34	0.85	0.39	0.450	348	245	1,690
1934-35	0.85	0.42	0.425	1,015	517	1,449[a]
1935-36	0.75	0.42	0.400	1,153	810	1,207
1936-37	0.75	0.48	0.400	2,033	1,234	1,825
1937-38	0.725	0.46[b]	0.400	2,317	1,517	1,089
1938-39	0.725	0.39[b]	0.375	1,028	1,600	1,147
1939-40	0.75	0.39	0.400	1,246	1,125	1,588
1940-41	0.70	0.40	0.375	2,401	1,000	1,973
(War years)						
1947-48	1.025	0.64	0.615	5,544	3,876	3,078
1948-49	1.05	0.89	0.600	6,450	3,943	3,728
1949-50	1.025	0.89	0.600	6,436	3,716	4,620
1950-51	1.15	0.90	0.600	7,122	3,435	5,445
1951-52	1.15	1.19	0.690	9,110	8,428	6,380
1952-53	1.10	0.99	0.700	11,972	5,847	5,527
1953-54	1.05	0.94	0.700	9,582	6,319	5,940
1954-55	1.05	0.91	0.725	9,994	5,039	1,407
1955-56	1.15	0.91	0.750	10,965	6,682	7,886

(Continued on next page.)

Table 16 continued.

a/ Estimated by authors.

b/ Estimated by S. W. Shear.

Sources:

Cols. 1, 2, and 3: California Canners' Prices (published f.o.b. quotations in first week of January of marketing year for all products except sauce for which prices are published opening prices). Juice prices from California Fruit News. Paste prices from Western Canner and Packer Yearbook, 1937-1943 and Commercial Bulletin for 1943-1955. Sauce price from Calpak Annual and trade information.

Col. 4: For years 1931-32 to 1940-41, packs from Canners League of California. For years 1947-48 to 1954-55, shipments from National Canners Association and Canners League of California as recorded in releases and bulletins. Marketing year, July 1-June 30.

Col. 5: For years 1927-28, 1929-30, and 1931-32, pack from Western Canner and Packer Yearbook and Statistical Number, 1937. For years 1935-36 to 1940-41 and 1951-52, pack from Canners League of California. For years from 1947-48, shipments for marketing year (June 1-May 31) from Canners League of California.

Col. 6: For years 1927-28, 1929-30, 1931-32, and 1933-34, pack from Western Canner and Packer Yearbook and Statistical Number, 1937. For years 1935-36 to 1940-41, pack from Canners League of California. For years from 1947-48, shipments for marketing year from Canners League of California.

TABLE 17

Construction of Index of Prices of
Tomato Products Competing with Canned Tomatoes

Marketing year	Weighted average prices of competing tomato products		Index of United States disposable income, 1947-1949 = 100	Index of competing tomato product prices, 1947-1949 = 100
	Dollars per dozen	Relatives, 1947-1949 = 100		
	1	2	3	4
1926-27	.70	82.7	38.0	216
1927-28	.66	77.8	38.2	204
1928-29	.62	73.2	40.1	182
1929-30	.62	72.7	41.7	174
1930-31	.65	76.7	36.5	210
1931-32	.68	80.5	29.6	272
1932-33	.51	60.5	24.8	244
1933-34	.50	59.2	25.9	229
1934-35	.57	67.1	29.2	230
1935-36	.53	62.5	33.1	189
1936-37	.56	65.6	36.6	179
1937-38	.57	67.4	36.4	185
1938-39	.48	56.3	36.2	156
1939-40	.51	59.6	38.9	153
1940-41	.52	61.8	44.2	140
(War years)				
1947-48	.80	94.9	95.0	100
1948-49	.89	104.1	101.9	102
1949-50	.86	101.0	103.2	98
1950-51	.91	106.8	115.8	92
1951-52	1.04	122.3	123.4	99
1952-53	.98	114.8	130.8	88
1953-54	.92	108.4	134.4	81
1954-55	.91	107.6	138.4	78

Sources:

Col. 1: Canned tomato product prices weighted by their corresponding packs and shipments. F.o.b. prices given in Table 16 and weighted by their corresponding packs and domestic shipments given in Table 16.

Col. 2: Column 1 figures expressed as percentages with 1947-1949 = 100.

Col. 3: See Table 15, column 4.

Col. 4: Column 2 as per cent of column 3.

TABLE 17

Construction of Index of Prices of
Tomato Products Competing with Canned Tomatoes

Marketing year	Weighted average prices of competing tomato products: Dollars per dozen	Weighted average prices of competing tomato products: Relatives, 1947-1949 = 100	Index of United States disposable income, 1947-1949 = 100	Index of competing tomato product prices, 1947-1949 = 100
	1	2	3	4
1926-27	.70	82.7	88.0	216
1927-28	.66	77.8	95.2	204
1928-29	.62	73.2	100.1	182
1929-30	.62	73.2	91.7	174
1930-31	.56	77.7	86.5	210
1931-32	.48	85.5	68.8	272
1932-33	.41	80.5	71.8	244
1933-34	.50	59.2	75.9	229
1934-35	.47	84.1	78.2	230
1935-36	.55	65.5	90.1	189
1936-37	.58	68.8	96.6	179
1937-38	.57	67.4	96.4	188
1938-39	.46	65.5	99.2	186
1939-40	.51	59.6	98.9	158
1940-41	.52	61.8	94.2	140
(War years)				
1942-43	.80	94.0	96.0	100
1943-44	.89	104.1	104.9	102
1944-45	.86	101.0	102.2	98
1945-46	.91	103.8	102.8	92
1946-47	1.04	122.5	122.4	99
1947-48	.98	115.8	120.8	88
1948-49	.92	108.4	124.4	81
1949-50	.91	107.5	128.4	78

Sources:

Col. 1: Canned tomato product prices weighted by their corresponding packs and shipments. T. 10. prices given in Table 16 and weighted by their corresponding packs and domestic shipments given in Table 15.

Col. 2: Column 1 figures expressed as percentages with 1947-1949 = 100.

Col. 3: See Table 15, column 4.

Col. 4: Column 2 as per cent of column 3.

TABLE 18

California Canned Tomatoes--Multiple Regression (Least-Squares) Equations and Auxiliary Statistics[a]
(1926-27 Through 1953-54, Excluding 1941-42 Through 1946-47)

Equation number	Dependent variable	Constant	Independent variables (figures in parentheses are t-ratios)						$\bar{R}$
			X_2	$Log_{10}X_3$	X_4	X_5	X_6	T	
1	X_1	-301.955	-2.222 (1.046)	215.608 (8.059)	0.259 (3.337)				0.963
2	X_1	-255.411	-2.153 (0.903)	193.013 (6.891)		0.236 (2.267)			0.954
3	X_1	-303.751	-2.506 (1.163)	209.949 (7.622)	0.289 (3.423)			0.511 (0.927)	0.963
4	X_1	-333.767	-2.479 (1.163)	218.922 (7.730)	0.241 (2.576)	0.129 (1.166)		0.656 (1.173)	0.964
5	X_1	-119.248	-2.056 (0.751)	141.935 (6.531)			-0.633 (0.625)		0.941

a/ Specification of variables:

X_1 = F.o.b. prices of California canned tomatoes (standard, No. 2), cents per dozen (Table 12, column 1).

X_2 = California canners' pack and movement of canned tomatoes, millions of actual cases (Table 12, column 2).

X_3 = Index of United States disposable personal income, 1947-1949 = 100 (Table 12, column 3).

X_4 = Adjusted index of competing canned vegetable prices, 1947-1949 = 100 (Table 12, column 4).

X_5 = Adjusted index of competing tomato product prices, 1947-1949 = 100 (Table 12, column 5).

X_6 = Other states' movements of canned tomatoes, millions of actual cases (Table 12, column 6).

T = Linear time trend, origin at 1924-25.

TABLE 16

California Canned Tomatoes--Multiple Regression (Least-Squares) Equations and Auxiliary Statistics[a]
(1925-27 Through 1953-54, Excluding 1941-42 Through 1945-47)

Equation number	Dependent variable	Constant	Independent variables (Figures in parentheses are t-ratios)						R
			X_2	$\log_{10} X_3$	X_4	X_5	X_6	T	
1	X_1	-931.055	-2.222 (1.024)	215.606 (6.059)	0.255 (3.357)				0.985
2	X_1	-255.411	-2.155 (0.903)	195.013 (6.891)		0.256 (3.427)			0.984
3	X_1	-303.751	-2.506 (1.165)	203.049 (7.622)	0.285 (3.425)			0.511 (0.997)	0.985
4	X_1	-333.767	-2.479 (1.165)	216.022 (7.725)	0.241 (2.576)	0.129 (1.166)		0.855 (1.175)	0.984
5	X_1	-115.248	-2.056 (0.751)	141.555 (6.551)			-0.555 (0.925)		0.941

a/ Specification of variables:

X_1 = F.o.b. prices of California canned tomatoes (standard, No. 2), cents per dozen (Table 12, column 2).

X_2 = California canners' pack and movement of canned tomatoes, millions of actual cases (Table 12, column 3).

X_3 = Index of United States disposable personal income, 1947-1949 = 100 (Table 12, column 3).

X_4 = Adjusted index of competing canned vegetable prices, 1947-1949 = 100 (Table 12, column 4).

X_5 = Adjusted index of competing tomato product prices, 1947-1949 = 100 (Table 12, column 5).

X_6 = Other states' movements of canned tomatoes, millions of actual cases (Table 12, column 6).

T = Linear time trend, origin at 1924-25.